Department of Energy

ROCKY FLATS FIELD OFFICE
P O BOX 928
GOLDEN COLORADO 80402-0928

SEP 0 2 1998

98-DOE-01916

Mr Steve Gunderson
RFCA Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80222-1530

Dear Mr Gunderson

Attached is the Decommissioning Operations Plan (DOP) for the decommissioning of Building 771/774, as well as responses to comments received to date from our regulators These documents address comments received from Chris Gilbreath on previous unofficial draft issues of the DOP and they address the Colorado Department of Public Health and Environment and the Environmental Protection Agency's comments received from Chris Gilbreath on August 27, 1998, and August 28, 1998, respectively Hard copies of the DOP were given to Chris Gilbreath on August 11, 1998, and Mark Aguilar on August 12, 1998, to start the agency 14 day review period prior to the 45 day public comment period We would like the public comment period to start on September 8, 1998, and end on October 23, 1998 We appreciate your support and cooperation in producing this plan

If you have any questions regarding this plan, please call John Rampe at (303) 966-6246 or Joe Springer at (303) 966-4076

John J Rampe
D&D Program Leader
Rocky Flats Field Office

Regina Sarter
RFCA Coordinator
Rocky Flats Field Office

Attachment

cc w/o Att
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K Klein, OOM, RFFO
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Department of Energy

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P O BOX 928
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SEP 0 3 1998

98-DOE-01917

Mr Tim Rehder
Rocky Flats Program Manager
U S Environmental Protection Agency
Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2466

Dear Mr Rehder

Attached is the Decommissioning Operations Plan (DOP) for the decommissioning of Building 771/774, as well as responses to comments received to date from our regulators These documents address comments received from Chris Gilbreath on previous unofficial draft issues of the DOP and they address the Colorado Department of Public Health and Environment and the Environmental Protection Agency's comments received from Chris Gilbreath on August 27, 1998, and August 28, 1998, respectively Hard copies of the DOP were given to Chris Gilbreath on August 11, 1998, and Mark Aguilar on August 12, 1998, to start the agency 14 day review period prior to the 45 day public comment period We would like the public comment period to start on September 8, 1998, and end on October 23, 1998 We appreciate your support and cooperation in producing this plan

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Building 771/774 Closure Project
Decommissioning Operations Plan

Revision 0

September 3, 1998

Building 771/774 Closure Project

Decommissioning Operations Plan

Revision 0

Approvals

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D G. Hamrick — **Date**
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Reviewed By. / 9/3/98

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Department of Energy — **Date**

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Tables and Figures

Executive Summary

The end of the Cold War moved the Department of Energy's (DOE) focus from nuclear weapons production to the stabilization and cleanup of previously operating facilities Many production facilities that once operated with a high priority are now considered surplus or excess Rocky Flats Environmental Technology Site (RFETS), which was significantly impacted by this transition of DOE missions, has embarked on the process of planning the closure of a major nuclear facility This document describes the closure process for the Buildings 771/774 cluster and its associated buildings Hereinafter this project will be referred to as the "771/774 Closure Project"

Building 771 was used for processing plutonium and actinides with a wide variety of processes between 1951 and 1989 This included many modifications, a substantial variation in operations and several upsets resulting in radiological contamination of the facility The Plutonium Vulnerability Study determined Building 771 to be the "most dangerous building in America " Since that time a significant quantity of Special Nuclear Material (SNM) has been removed, lowering the risks involved Now, RFETS is undertaking the task of planning a closure project which will safely and cost-effectively deactivate, decontaminate and decommission the cluster

Both "No Action" and "Reuse" alternatives were considered for the area after deactivation However, it was determined that the cluster should be removed for the following reasons 1) due to the age of the cluster, as well as the radiological contamination levels, it is more economical to remove the cluster rather than renovate them for some undefined future use, 2) removal of the cluster will allow, if needed for remediation of the soil beneath, and 3) removal of the clusters will allow for a significant reduction of risk at RFETS

Strategic End Points for the Building 771/774 Closure Project are

- Material in the building is removed and the building is then ready for demolition leaving the slab in place Disposal of the contents will be Low Level Waste (LLW), Transuranic (TRU), Mixed Waste (MW), Hazardous Waste or Industrial Waste
- Characterization of the remaining materials and characteristics in the slab and nearby soil will be documented to support a monitoring program as needed for future environmental remediation
- A monitoring plan will be written in consultation with the Environmental Protection Agency (EPA), Colorado Department of Public Health and Environment (CDPHE) and the Defense Nuclear Facility Safety Board (DNFSB) as needed
- This DOP covers decommissioning activities up to but not including demolition of Buildings 771 and 774 Demolition or remediation activities will be added in a future revision to the Decommissioning Operations Plan (DOP)

The 771/774 Closure Project utilizes a phased approach This approach includes a parallel approach where deactivation, decontamination and decommissioning activities may occur at any time within the facility The project is also broken into six phases as shown below

Phase I	-	Major Hazard Reduction	• Phase IV	-	Utility System Shutdown
Phase II	-	Equipment Dismantlement	• Phase V	-	Building Demolition
Phase III	-	Building Decontamination	• Phase VI	-	Site Remediation

This phased approach enables Building 771 to begin closure in a number of areas allowing for the most efficient utilization of resources It also accelerates closure schedules for the cluster This will reduce the costs associated with the surveillance and maintenance of the cluster allowing these costs to be reallocated towards other risk-reduction activities at RFETS Throughout this approach a number of established programs will be employed, including Environmental, Health & Safety, Waste Management and Quality Assurance

In many cases, this document is a "road map," pointing the reader to existing documentation and processes that are implemented on site In undertaking such a large task, there will be cases where circumstances are not as were predicted Therefore, this document details the decision process that will be utilized throughout the project

The closure process for the cluster has already begun with initial hazard reduction activities The completion date for closure (~2005) is projected from the schedule and budget in conjunction with the Closure Project Baseline Currently, activities are underway to develop logic tied, resource-loaded schedules for the closure of Building 771/774 and its associated facilities It is expected that this effort will result in a significantly accelerated project completion date that will be incorporated into the Closure Project Baseline

Wastes resulting from this activity will be managed in accordance with all applicable Federal, State, and local requirements Packaging of radiological waste will follow RFETS procedures An estimated 870,000 ft^3 of Low Level Waste, 2,200 ft^3 of Low Level Mixed waste and 61,000 ft^3 of TRU waste are expected to be generated as a result of this project

All contaminated wastes will be managed in accordance with applicable regulations and ultimately sent to the appropriate off-site storage or disposal facility such as Envirocare, Nevada Test Site (NTS) or the Waste Isolation Pilot Plant (WIPP) Non contaminated rubble and debris will be disposed in accordance with solid waste regulations The strategy of the Building 771/774 Closure Project is to safely and cost-effectively close the facility in compliance with all applicable Federal, State and local rules and regulations This will eliminate the costs associated with the surveillance and maintenance (S&M) of this facility allowing these savings to be reallocated towards other risk-reduction activities at RFETS Furthermore, the closure of the Building 771/774 Closure Project will result in a significant reduction of risk at RFETS and help to achieve the Rocky Flats vision

1. Introduction

On July 19, 1996, the DOE, CDPHE and EPA signed the Rocky Flats Clean-up Agreement (RFCA) RFCA is the document that will govern the clean up and decommissioning of RFETS facilities The clean-up actions will be completed as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) removal actions In compliance with RFCA, DOE has developed this DOP which outlines how the RFETS decommissioning activities for the 771/774 Cluster will be managed and controlled RFCA requires that a DOP be developed for the most hazardous facilities at RFETS As the Integrating Management Contractor (IMC) at RFETS, Kaiser-Hill Company, L L C (K-H) has developed a Decommissioning Program Management Plan (DPMP), a Site wide management and project planning document to identify how the RFETS decommissioning program will be implemented and monitored The referenced procedures and project documents are identified to add clarity to this DOP The DOP will be transmitted to the Lead Regulatory Agency (LRA) for approval in accordance with RFCA In addition, the Reconnaissance Level Characterization Report (RLCR) will be submitted in accordance with RFCA RFCA identifies six facilities that will require a DOP and states that other facilities may require a DOP The necessity for a DOP is based on the hazards identified in the facility RLCR Cluster 771/774 is one of the identified facilities This DOP covers Building 771 and 774 only All other ancillary buildings and trailers currently associated with Building 771 and 774 are included for information only

The scope of this DOP includes decommissioning activities but does not address final building demolition or subsequent environmental remediation Internal demolition may be conducted as necessary for stripout or decontamination The information was derived from walkdowns of the facilities, information obtained from the RLCR and actions completed during deactivation to achieve the identified end points, which are included in Appendix 9

1.1 Background

The end of the Cold War moved DOE's focus from nuclear weapons production to the stabilization and cleanup of previously operating facilities Of the over 700 facilities identified at RFETS, eight are contaminated with plutonium, twelve are contaminated with both uranium and plutonium, thirty-four have minor radiological contamination and the remainder have no known history of radiological contamination Many of these facilities were used to conduct production operations while others were ancillary facilities used for storage, administration and support services

Building 771 was used for processing plutonium and other actinides with a wide variety of processes between 1951 and 1989 This included many modifications, a substantial variation in operations and several upsets resulting in radiological contamination of the facility References found in Appendix 1 provide historical details of the building through 1992 as well as a comprehensive summary of the current status of the building and its contents

1.2 "Contractor Blind" Approach

This DOP details what is required to accomplish the project, regardless of which contractor organization will have management responsibility for conduct of various project tasks Once the project's tasks are defined, decisions as to which organization will have responsibility will be determined Roles and responsibilities are detailed in Section 10

2. Building/Cluster Description

The 771/774 Closure Project scope includes the deactivation, decontamination and decommissioning of Building 771/774 and the ancillary support structures, including trailers, plant systems and utilities, underground tank systems and waste sites These areas are referred to as the 771/774 cluster in the Closure Project Baseline

Removal of the Building 771/774 structures, foundation and underground utilities (including process waste system pipes and ancillary underground equipment), as well as remediation of soil contamination will be completed as necessary during the subsequent environmental remediation phase These demolition or remediation activities are not included as part of this DOP, they will be added in a future revision to the DOP This revision, which would include the Final Building Survey plan and the demolition plan, would be a Major Modification as defined by RFCA Implementation Guidance document RF/RMRS-97-043 paragraph 3 10 1 As such, the revision would require advance written notification and a public review comment period Demolition/disposition of Type 1 and 2 buildings in the 771/774 cluster will be conducted in accordance with the Decommissioning Program Plan, sections 3 4 5 and 3 4 6

The location of each building/facility is shown graphically in Figure 2-1 A complete list of these buildings with a brief description is shown in Table 2-1 A complete list of systems involved in this project is shown in Table 2-2

Table 2-1 Buildings and Structures

Identifier #	Description of Building/Facility
262	Diesel fuel tank
714/714A	Hydrofluoric (HF) storage (operationally empty)
714B	Emergency Breathing Air
715	Emergency generator #1
716	Emergency generator #2
717	Magnahelic Gauge Building
728	Process waste pit / underground storage tank (No underground work)
770	Maintenance and offices
771	Former Plutonium Recovery Facility
771B	Carpenter shop
771C	Nuclear waste packing/drum counting (Annex)
772/772A	Fluorine/acid storage bldg
773	Guard post
774	Pu waste treatment facility
775	Sanitary lift station

N/A	Exhaust Stack
T771A-H & J- L	Various trailers
771A	Corridor F Office Area

Table 2-2 771 Facility Systems

Ambient air particulate samplers
Breathing Air
Building chemical/gas support (HF, Ar, F, N_2, O_2, NaOH, KOH, Propane)
Continuous Air Monitoring
Criticality Alarm System
Domestic water (hot and cold)
Electrical distribution
Emergency Diesel Generators and Diesel Fuel oil (no underground work)
Eye wash and safety showers
Fire detection (Glovebox Overheat, plenum deluge Contamination control (CC) cell, risers, fire phones, and pull stations)
Fire suppression (sprinklers, dry chemical, plenum deluge, hose stations, mains, and hydrants)
Footing
Grounding and lightning protection
Health-physics vacuum system
Heating, Ventilation, and Air Conditioning (HVAC) Zones I, IA, II, III, IV
Inert Systems (Nitrogen, Argon) with oxygen analyzers
Instrument Air
Life Safety/Disaster Warning System
Natural gas
Plant Air
Process chilled water
Process cooling water
Process systems
Process waste
Roof Drains
Sanitary waste
Security System (door and vault alarms, video monitors)
Steam and condensate
Tank purging and venting system
Telecommunication/Local Area Network
Uninterruptible power supply (UPS)
Vacuum transfer system

2.1 Interfaces

2 1 1 System Interfaces

A number of systems are interconnected between Building 771/774 cluster and other facilities on site These systems are listed below Consideration for the interfaces will be given as closure is planned for each portion and actions will be taken to prevent unexpected disruption of services

- Electrical - connected to the 515/516 Substation
- Nitrogen - connected to the Nitrogen plant
- Argon Tank - connected to a tank outside the facility
- Plant Air - received from Building 776
- Breathing Air - received from Building 707/708
- Criticality System - connected to the plant-wide system
- Water - received from Building 124
- Steam - received from Building 443
- Sanitary Sewer - connected to the plant-wide system
- Liquid Process Waste - connected to the plant-wide system
- Natural Gas - connected to the plant-wide system
- Telephone System - connected to the plant-wide system
- Fire Protection Systems - connected to the plant-wide system
- Security Protection Systems - connected to the plant-wide system

2 1 2 Physical Interfaces

There are three tunnels that connect Buildings 771/774 to other structures

- 267 ft tunnel connects Building 771 to Building 776 for purposes of moving materials
- 170 ft utility tunnel connects Building 771 to Building 774
- 140 ft exhaust duct tunnel connects Building 771 to the exhaust stack

The grounding/lightning system is interconnected between Building 771, Building 715 and Building 774

The underground tunnels and utilities associated with the 771/774 Closure Project are not within the scope of this closure project These items will be capped and left in place Remediation and/or monitoring will be completed by Environmental Remediation

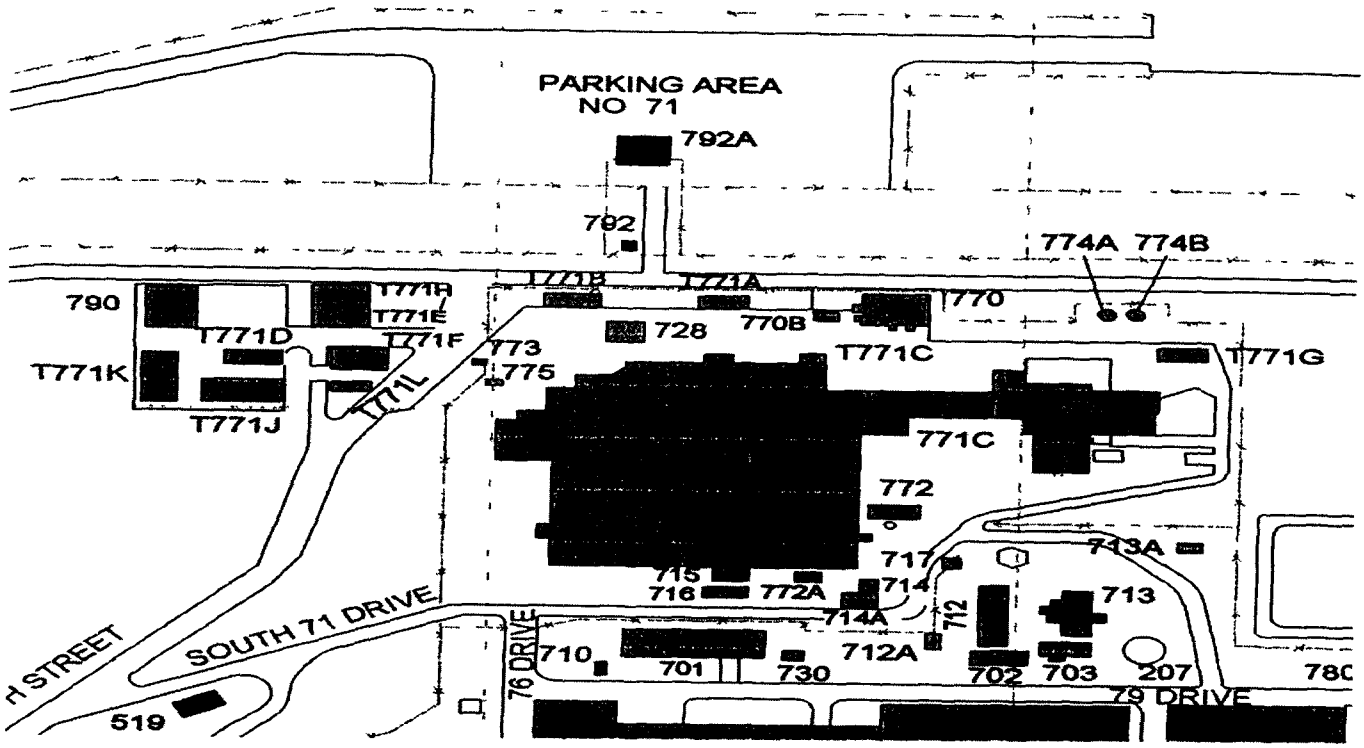

Figure 2-1 Rocky Flats Environmental Technology Site Building 771/774 Closure Project

3. Alternative Analysis and Selection

Several alternatives were considered for the near-term management of the 771/774 Closure Project The preamble to RFCA and the Rocky Flats vision statement both contain the objective that buildings will be decontaminated as required for future use or demolition The evaluation of the scope of work for the 771/774 Closure Project considered the following three alternatives

- Alternative 1 - Decontamination/Decommissioning of the 771/774 Closure Project facilities
- Alternative 2 - No Action with Safe Shutdown Maintenance
- Alternative 3 - Reuse of the 771/774 Closure Project facilities

The alternatives were evaluated for effectiveness, implementability and relative costs The results of the alternative analysis are summarized in Table 3-1 Alternative 1 is the selected alternative Decontamination and decommissioning of the 771/774 Closure Project facilities clearly supports the RFETS vision of safe, accelerated and cost-effective closure This alternative has the lowest life-cycle costs, the fastest risk reduction and is integrated with the operations of the site This alternative also maintains long-term protection of public health and the environment Short-term impacts to the environment (i e , impacts during the duration of the action) can be physically and administratively controlled There are no significant negative aspects to decontamination and decommissioning of the clusters at this time A full discussion of the impacts is provided in Section 8

Alternative 2, No Action with Safe Shutdown Maintenance, does not immediately achieve RFETS goals This alternative does not accomplish accelerated closure and defers decontamination and decommissioning This results in an increase in the life-cycle cost of closure The short-term protection of public health and the environment is achieved by inaction However, this protection decreases over time due to continued degradation of systems and equipment through aging Furthermore, waste and debris requiring treatment and/or disposal, and the risks associated with managing them, are not eliminated from the cluster under this alternative

Alternative 3, Reuse, is not feasible as evidenced in evaluations that indicated that reuse of the 771/774 Closure Project facilities is neither required nor beneficial Furthermore, as with Alternative 2, implementation of this action will result in the deferral not elimination of eventual decontamination and decommissioning necessary for final closure

Table 3-1 Alternative Analysis Summary

Alternative	Description	Effectiveness	Implementation Feasibility	Relative Cost
1- D&D	Decontamination and Decommissioning (D&D) activities will follow area-specific plans approved in accordance with RFCA Activities consist of decontamination as deemed necessary, and decommissioning to include dismantlement and demolition	D&D is effective in achieving the long-term goals of the RFCA preamble and the Rocky Flats Vision The mortgage costs are eliminated and the risks and hazards are significantly reduced	Technology currently exists to achieve the objectives of this alternative Integration with other site activities can be accomplished	Immediate D&D has the lowest life-cycle costs since the cluster must eventually incur these costs as part of its baseline Immediate closure achieves minimal landlord and D&D costs
2 - No Action	No action will maintain the 771/774 Closure Project in its current configuration No additional equipment would be removed unless the present safe shutdown status of the cluster becomes compromised	No Action delays the closure activities that must eventually be performed to meet the goals of RFCA Deferring the closure could make funding available to other site closure activities Long term goals could be jeopardized if the integrity of the mothballed facilities increases risk to workers and the environment	No Action would cause a disruption to the long-term plans for RFETS and is not ideally implementable since the closure of the cluster is planned to occur early in the site closure process	No Action results in higher costs than immediate D&D since landlord costs would continue to be incurred until D&D is eventually completed These costs are estimated at $5 million per year for the period the building stands inactive D&D costs (adjusted for future value) would still be required
3 - Reuse	Reuse of the 771/774 Cluster would keep the facilities in their current configuration A new mission for the facilities, in support of the present site Cleanup Mission, would be assigned by the site Utilization Review Board Depending on the nature of the new mission, additional removal of equipment may be necessary The current utilities and equipment would be maintained until a new mission was defined	Reuse of the 771/774 Closure Project was evaluated by the Sites Facility Use Committee and it was determined that there was no further mission for the cluster Use of the cluster for an alternative off-site use was evaluated in accordance with DOE Order 4300/ 1C, Subparagraph g, Disposal of Government -Owned Land Improvements No further use was identified	Because no new mission has been identified for the cluster and because the closure of the cluster is identified through the Life-Cycle baseline to begin soon, implementation of this alternative is not considered administratively feasible	This alternative would result in the greatest life-cycle costs as the reuse mission would more than likely require expenditures for modifications to the buildings in addition to existing landlord/surveillance costs Furthermore, D&D costs (adjusted for future value) would still be required

4. Project Approach

A number of strategies were used in the development of the 771/774 Closure Project scope, work logic, schedule performance, basis of estimates and costs The strategies employed in the 771/774 Closure Project are similar to as those employed by the Site's Ten Year Planning Exercise, "Accelerated Cleanup Focus on 2006"

- Maintain the site's safety envelope ensuring the continued safety of site workers, the public and the environment during cleanup activities
- Eliminate highest priority risks first High priority risk activities primarily involve stabilization, consolidation, interim storage and shipment of SNM
- Reduce the site's high nuclear facility baseline costs by accelerating closure of these facilities through expedited stabilization, consolidation and off-site shipment of SNM
- Demolish site facilities and infrastructure to eliminate future funding and safety liabilities, ongoing maintenance and surveillance and residual radioactive material management
- Clean up environmentally contaminated areas to the extent that sources of contamination that pose a significant risk are mitigated and controlled Site cleanup is performed to the extent necessary to support the land uses described in RFCA and to ensure that downstream water quality standards are met
- Reduce infrastructure and management costs at a steady pace throughout the life of the cleanup project
- Comply with all applicable laws, regulations and agreements

4 1 Strategic Project Phases

4 1 1 Integrated Approach to Closure

The 771/774 Closure Project supports the DOE Strategic plan by closing a major nuclear facility at RFETS

The 771/774 Closure Project utilizes a more efficient approach to closure This approach moves away from the sequential "deactivation, decontamination and decommissioning" in series and moves towards a well-integrated parallel approach where all three of these activities may occur at any time, simultaneously, within the facility This approach is expected to be more cost-effective as it allows more work to be accomplished with fewer resources in less time It also significantly reduces exposure of the workers to hazards For example, in the typical series model, workers would perform radiological surveys and other necessary characterization activities, enter each glovebox and sweep down the box to remove holdup Then, much later, the workers would return to that same box, redo the necessary radiological surveys, etc and begin the removal process Instead, by performing closure activities in parallel the team can simply perform the characterization activities once The team can then complete the removal of holdup and the removal on the equipment immediately thereafter, thus eliminating the risk in a shorter time, with fewer resources, and less exposure

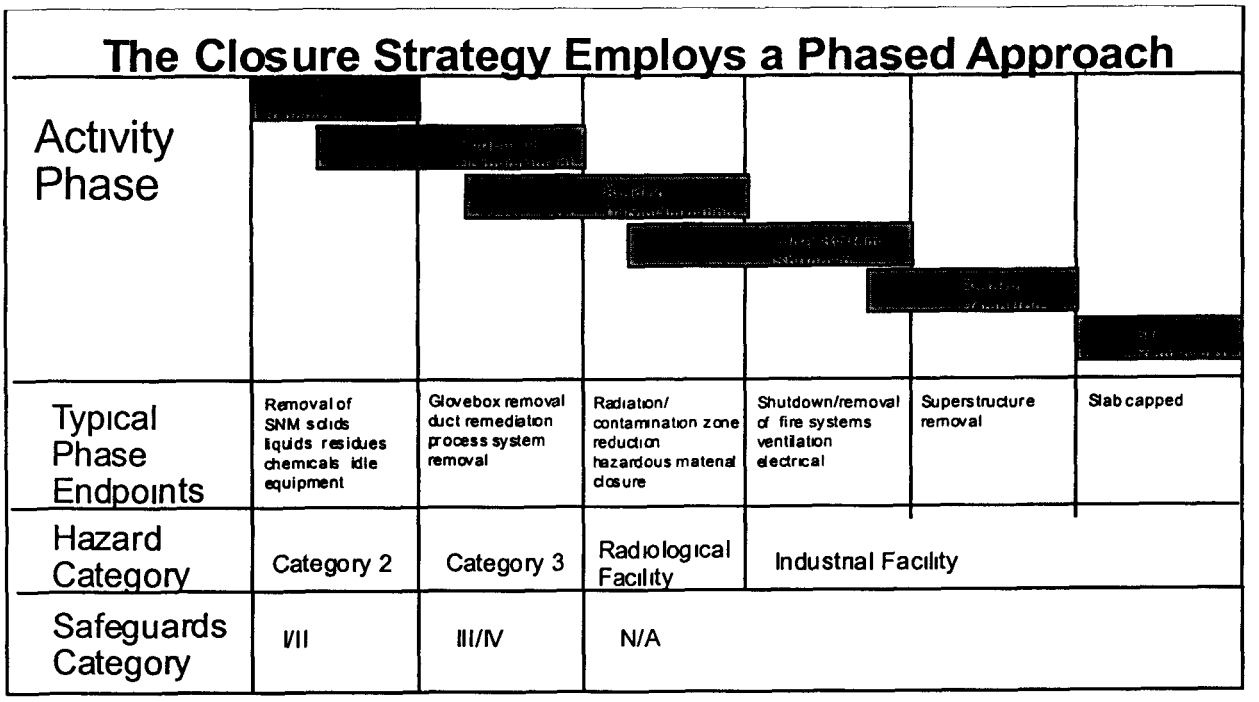

Figure 4-1 Phased Approach to Closure

4 1 2 Phased Approach to Closure

The 771/774 Closure Project will utilize a phased approach to the closure of the associated facilities The following is an overview of the activities that occur in each of the phases and are described below in more detail (Note This DOP covers only project Phases I-IV, a future revision will cover Phase V)

Phase I - Major Hazard Reduction

- Remove combustibles
- Disassemble and remove loose/free SNM to address criticality concerns
- Drain lines (process, steam, chemical, etc)
- Drain liquid process tanks
- Remove equipment internal to gloveboxes
- Wipe down gloveboxes
- Waste characterization and disposal
- Reduce surveillances
- Isolate and contain material within the building that may migrate
- Remove stored SNM material
- Stabilize radiological contamination and seal gloveports
- Remove radiological contamination and stabilize Rm 141

Phase II - Equipment Dismantlement

- Remove process piping
- Remove process vessels
- Remove glovebox off-gas and ventilation ducting legs
- Ambient Air Monitoring in place
- Remove Zone I HVAC system
- Remove gloveboxes
- Remove hoods
- Remove process pumps

Phase III - Building Decontamination

- Remove hazardous and radiological contamination to minimize hazardous/radioactive material dispersion during demolition and minimize waste disposal cost
- Remove non-load bearing walls to minimize waste disposal cost
- Remove remaining asbestos, lead, mercury, etc

Phase IV - Utility System Shutdown

- Isolate steam to facility
- Isolate water to facility
- Isolate sewer line
- Isolate and liquid effluent discharges
- Deactivate HVAC system
- Remove remaining HEPA filters
- Remove/reconfigure electrical switch gear
- Remove remaining operational system that supported previous phases
- Isolate fire system
- Remove accumulated waste and remaining office furniture
- Isolate pressurized air systems
- Isolate inert systems (N_2, Ar) and O_2 analyzers
- Isolate diesel generators, UPS, and grounding/lightning protection
- Deactivate criticality system
- Deactivate building chemical/gas support

Phase V - Building Demolition

- Demolish building
- Monitor for releases during building demolition
- Disposal of rubble

Phase VI - Site Remediation

- Monitor site for any environmental impacts
- Cap building slab to contain hazardous materials

Documentation - All Phases

- Documentation of End Points performance and completion
- Gathering and transfer of facility records for archive purposes

4 2 Enabling the Goals of Closure

A major piece of the overall closure strategy focuses around how equipment will be selected, prioritized and dispositioned in order to enable the goals of closure The first step taken was to select the equipment groups or geographical areas that would be defined as worksets This selection process resulted in 81 worksets being identified for the 771/774 Closure Project These worksets were then evaluated using the criteria located in Appendix 3 Weighting factors were applied to the criteria in order to provide a preliminary prioritization of the worksets This preliminary prioritization, combined with solid engineering judgment, enabled the project team to make informed decisions concerning the order in which equipment is removed from the cluster A complete list of the worksets is located in Appendix 4

It is important to understand however that this prioritization is not necessarily final, but rather will be used as a planning guide for activity order Several issues may affect the order in which worksets are removed Activities may be either delayed or brought forward based on budget, available resources and approval status Flexibility in the actual completion of the work sets will allow a more efficient closure of the facilities In no case will a lower priority activity be performed when it is not safe or economical to do so For example, the plenum removal (priority 57) would not be performed prior to the removal of the gloveboxes, as it would not be safe to do so This type of error would be prevented by the health and safety controls described in Section 5 Therefore, changing of priorities will not necessitate a resubmission of this document

4 3 Determining Project End Points

With the worksets selected and prioritized, specific end points were developed for each set The individual sets and associated end points can be found in Appendix 9

4 4 Characterization Approach

The 771/774 Closure Project requires that the physical, chemical and radiological condition of each workset be assessed Characterization is the process of identifying what physical, chemical, biological and radiological hazards are associated with a workset and/or facility The hazard may be contained (e g , acid in a tank) or loose (e g , radioactive material on a floor) The hazard may be potential (e g pressurized steam line) or immediate (e g , a leaking pipe that contains radioactive material) Characterization is achieved through a combination of facility walkdowns (physical walkdowns), review of historical records, information from similar buildings, interviews of personnel familiar with building operations, direct measurement, non destructive assay and sample collection for laboratory analysis The characterization data will be utilized for assessing actual and potential hazards as a basis for the development of the technical approach to work activities, and to support the proper disposal of property and waste

This section discusses the types and phases of characterization that have been and will be completed for the 771/774 Closure Project The Data Quality Objectives (DQO) process will be utilized for the characterization activities as discussed below Additionally, the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) will be adapted for the final surveys for this project The Site's Decommissioning Characterization Protocols are being developed and are scheduled for implementation in October 1998 These Protocols, which include guidance on both the DQO process and MARSSIM, provide a consistent sampling and analysis process for characterization activities

Scoping Characterization

The Scoping Characterization phase is the process of gathering information about facilities' hazards from existing sources The main sources of this information are historical records, routine survey records, facility walkdowns and interviews with facility personnel and former facility personnel Note that no additional sampling or surveys are necessary in this characterization phase The compilation of this information is used as the basis for preliminary evaluations of proposed decommissioning activities The Scoping Characterization phase feeds information into the Reconnaissance Characterization phase

The 771/774 Closure Project's Scoping Characterization phase is complete The documents that were reviewed in gathering this information are identified in the project files

Reconnaissance Level Characterization

The Reconnaissance Level Characterization phase establishes a definitive baseline of information about the facility's hazards The Reconnaissance Level Characterization Report (RLCR) describes the presence of materials and isotopes that will impact the closure of the 771/774 cluster The importance of the presence of these items is based on both worker safety and waste disposal/regulatory concerns Each of the isotopes or materials has been identified through investigation of facility-related documents, walkdowns of the facility, a review of historical data and process knowledge The RLCR may be used, as a basis to define the required sampling needed to support facility deactivation, decontamination and structural demolition Additionally, the RLCR provides information to support ALARA (As Low As Reasonably Achievable) planning for the protection of the workers and environment The RCLR also provides preliminary characterization data to be used for the preparation of work procedures As discussed below, additional detailed characterization may be required This was completed on June 29, 1998

In-Process Characterization

To supplement the Reconnaissance Characterization, additional radiological, chemical samples and safety surveys will be completed as necessary, to prepare appropriate work authorization documents such as Radiation Work Permits (RWP) and a Job Hazard Analysis (JHA) These surveys are performed in accordance with existing site procedures If conditions have changed, reviews will be performed as appropriate to determine if other actions/controls are necessary As the work continues and hazards are removed, further characterization is completed to verify the effectiveness of the decommissioning work efforts This continued sampling and surveying is called In-Process Characterization

Final Building Survey

The Decommissioning Program Plan (DPP) requires that "at the end of the decommissioning, Site personnel will confirm that their activities have achieved the release standard for buildings destined for reuse or the completion of building disposition for buildings that are demolished such that only environmental restoration activities remain "

Accordingly, the Final Building Survey is conducted to demonstrate that the radiological and industrial contaminants within the facility have been reduced to levels that comply with the established release criteria If unable to reach free-release criteria (see para 4 7 1), the building will be disposed of as LLW

A Sampling and Analysis plan, developed in accordance with MARSSIM, is intended to be utilized to execute the characterization of the remaining hazards on or below the slab The plan will be included with the DOP revision for building demolition (see section 2) The Final Building Survey report will be included as part of the project's administrative record and turned over to the Contractor's Environmental Remediation Department for final site remediation

Slab/Under Building Characterization

This sampling and analysis will be conducted to characterize the remaining building slab and under building contamination The results of this survey will be used to prepare for environmental monitoring and remediation

Independent Review of Final Building Survey

The independent review of the Final Building Survey will be conducted by an independent company to verify that the facility meets established release criteria This independent review will not be conducted for material being released as LLW The independent review provides an independent evaluation of the Final Building Survey methodology, survey data, field sampling and laboratory methods and results All discrepancies and anomalies identified will be addressed

Physical Characterization

Full physical walkdowns of the facility are being conducted to obtain the physical characterization of the facility This includes dimensional data as well as physical details such as the amount of lead shielding, Benelex, number of High Efficiency Particulate Air (HEPA) filters, etc It will also gather data concerning physical items contained within the equipment such as tools, pumps, vessels, etc

4 4 1 Radiological/SNM Characterization

4 4 1 1 Radiological Contamination/Penetrating Radiation Characterization

The radiological characterization of the facility and equipment will make use of the existing operational radiation protection survey supplemented by additional surveys to determine the presence and/or level of radiological contamination The radiological monitoring of radiation exposure levels, contamination and airborne radioactivity will comply with the requirements of 10 CFR 835, RFETS Radiological Control Manual, NUREG 5849, "Manual for Conducting Surveys in Support of License Termination, Decommissioning Characterization Protocols" and applicable site procedures Trained and qualified personnel using instruments that are properly calibrated and routinely tested for operability will perform the characterization surveys The results of radiological surveys will typically be documented on a diagram The documentation will contain sufficient detail to permit identification of original survey and sampling locations

Using the facility operations and radiological history, sampling locations will be selected to quantify radioactivity based on suspected or known contamination at a given location Examples include horizontal surfaces such as the tops of gloveboxes and piping in overhead areas Other random locations of unaffected areas will be selected to confirm no radiological concerns exist Examples of these include office areas and areas where radioactivity is not expected

It is not intended to consider this characterization the final assessment by which worker protection and safety decisions will be made Additional characterizations will be performed as required to prepare work authorization documents This type of characterization will typically be performed shortly before work is initiated to ensure conditions have not changed and to more accurately assess those hazards This characterization will be used to determine appropriate personal protective equipment to ensure worker health and safety

4 4 1 2 SNM Holdup

Holdup is defined as the amount of nuclear material remaining in process equipment (e g gloveboxes, ventilation ducts) and facilities after the in-process material, stored materials and product are removed Holdup has been found in Building 771 as oxides (Safeguards and Security attractiveness type C) or low-grade materials (type D)

To ensure the accuracy of the measurements determining the amount of remaining holdup, all background radiation sources (e g waste drums) will be removed from the area being measured All packaged fissile material will be removed from the gloveboxes and a radiological survey conducted prior to the measurements All measurement sites must be free of external radiological contamination to insure that measurement equipment is not contaminated and remains usable Measurements are conducted in accordance with the approved site holdup measurement plan 4-81232-97-PLAN-HOLDUP-001, Revision 1 that will determine the types and quantities of isotopes present

4 4 2 Chemical Characterization

The chemical characterization of the facility will make use of existing process knowledge supplemented by sample analysis The characterization activities will

- evaluate the chemical characteristics of hazardous material contamination
- assess the environmental parameters that affect potential human exposure from existing or residual chemical contamination
- support the preparation of work plans to enhance safety of the worker
- allow for estimation and compliant management of generated wastes
- ensure worker and public safety
- ensure compliant management of chemicals

4 4 2 1 Asbestos Characterization

The objective of the asbestos material characterization is to determine the type, quantity and location of asbestos containing building material (ACM) The characterization of the building will be conducted in several phases These phases will correspond to the work areas identified by the overall building closure schedule Work areas will be characterized prior to the disruption or removal of suspect materials

Asbestos material characterization includes a review of documents detailing facility history, facility construction drawings, facility walkdowns, sample collection and analysis and evaluation and

documentation of results and conclusions The asbestos characterization survey will be designed and managed by a qualified individual per the requirements of 29 CFR 1926 1101 Samples will be collected at locations identified during the review of facility drawings and walkdowns Surveys will be performed by trained individuals following written procedures All samples will be tracked from sample collection, transport and analysis and all samples will be analyzed at a certified laboratory Data will be recorded in an orderly and verifiable manner and will be reviewed by a qualified Building Inspector for accuracy and consistency A report will be prepared summarizing laboratory results including sample location, sample description, asbestos type and percentage, non-asbestos fiber types, matrix types and sample color

4 4 2 2 Beryllium Characterization

Work areas and equipment where beryllium is known or suspected of being present will be surveyed prior to disruption or removal of such items or surfaces Beryllium smears will be collected and analyzed from various equipment and equipment surfaces within the facility Individuals trained in accordance with the RFETS Beryllium Control Program will conduct sampling plans and analysis

4 4 2 3 Lead Characterization

Lead shielding and lead-based paint are known to be present in the facility Accordingly all painted surfaces are presumed lead bearing unless proven otherwise This approach will minimize characterization costs and ensure worker protection Known lead will be disposed of appropriately and suspect lead will be sampled Selected lead sampling will be conducted by collecting media samples for analysis and/or with portable lead detection equipment Trained individuals using written procedures will conduct the sampling and analysis

4 4 2 4 Polychlorinated Biphenyls (PCBs) Characterization

Polychlorinated biphenyl, also referred to as PCB, is a term given to a series of chemical compounds produced industrially by the chlorination of biphenyl with anhydrous chlorine and iron filings or ferric chloride as a catalyst PCBs have been linked to liver damage and to a lesser degree, kidney damage

OSHA regulates human exposure levels to PCBs OSHA guidelines will be implemented as appropriate to minimize worker exposure to PCBs Other than the potential for PCBs in oil (contained in equipment or resulting from spills from equipment maintenance), adhesives and paints (in high temperature areas) and lighting ballasts, no additional contamination is suspected In any event, OSHA guidelines will be implemented where PCBs are identified and the appropriate personal protective equipment (PPE) will be donned by workers The 771/774 Closure Project will manage all materials <50ppm PCBs as non-Toxic Substance Control Act (TSCA) regulated

4.5 General Closure Approach

This section provides a general description of the sequential steps which will be followed to decommission rooms/areas within the 771/774 Closure Project The detailed technical approach to decommission an area/room of the Closure Project will be developed and approved in accordance with the Integrated Work Control Process (IWCP) The IWCP contains detailed instructions for performing work on-Site and contains specific controls and requirements to ensure protection of the workers, public and environment Provided in Appendix 5 is a flow chart of this process

Following is a summary description and typical sequence of operations that will be employed during the closure of worksets within the 771/774 Closure Project These activities will be controlled and authorized and may be modified as appropriate to address a specific condition or hazard in a particular workset

- Additional radiological, chemical, industrial hygiene, environmental and safety characterization will be performed as necessary to prepare appropriate work authorization documents This characterization process will be an ongoing process throughout the closure process to ensure the work area hazards are adequately quantified and proper personnel and environmental protection is provided
- Prior to starting any activities, all involved personnel will participate in a pre-evolution briefing to discuss the proposed work and to review the applicable safety requirements
- If asbestos-containing materials will be disturbed as part of the scope of activity, the area will be abated by a qualified contractor prior to start of that work activity The abatement activity will be carefully coordinated to minimize interference with other activities
- Equipment and horizontal surfaces within a work area/room will be vacuumed and/or wiped down Damp cloth and decontamination fluid and/or tack rags may be used This housecleaning will be performed to minimize personnel exposure to potentially contaminated dust during subsequent decommissioning activities This action would also remove any loose (asbestos, lead, beryllium) radiological contamination
- Electrical power to components/systems to be removed will be de-energized and locked out/tagged out and disconnected Electrical system conduit that cannot be de-energized or is required for continued closure activities will be clearly identified Temporary power may be utilized and will be clearly identified and controlled
- Temporary ventilation may be used as necessary
- Piping systems and equipment will be drained, isolated and locked out/tagged out prior to any work on the system/equipment All liquids collected will be appropriately sampled and managed/dispositioned in accordance with site waste management procedures
- Interconnecting system piping, conduit, bracing and supports will be removed as necessary to remove equipment and components from the room
- Equipment within the work area/room will be removed As a general rule, equipment located at floor level will be removed first to allow better access to overhead areas Equipment removal may include the disassembly and decontamination of the equipment if it is determined to be cost-effective or necessary to ensure safety The decontamination efforts may be completed in place or the equipment/glovebox may be moved to another area for decontamination and size reduction A variety of decontamination techniques may be used including a simple wipe down, use of abrasive material such as scotch brite, steel wool or sandpaper More aggressive methods discussed in the DOE Decommissioning Handbook, (DOE/EM - 0142P) may be used if necessary All equipment and components to be free released will be surveyed in accordance with the RFETS Radiation Control Manual and associated implementing procedures prior to release

Gloveboxes, B-Boxes and Hoods will be decommissioned using the following approach

- Equipment and components will be removed from the internal portions of the contamination containment device (i e , glovebox) as needed to facilitate waste packaging
- Internal surfaces will be wiped down using tack rags, non-ionic clean solution, loose materials will be swept up as required More aggressive techniques may be used such as abrasive grit blast or other methods discussed in the DOE Decommissioning Handbook
- Based on radiological survey measurements, a strippable coating may be applied to fix surface contamination during size reduction operations When appropriate, the strippable coating may be applied and removed several times to reduce surface contamination levels
- Prior to the size reduction of a glovebox, B-Box or hood, it will be enclosed in a contamination control containment Depending on the layout of the room, the size of the component to be size reduced and radiological contamination levels, a containment may be erected around the equipment in place or the equipment may be moved to a semi-permanent size reduction facility located within Building 771, but in another room/area The size reduction system is a remotely operated device such as a robotic manipulator arm which will perform the size reduction Building staff would move gloveboxes and tanks either whole or in large sections into the containment All cutting operations would then be performed remotely under programmed control or under operator control utilizing approved working procedures Cut pieces would be bagged-out of the containment for assay and final packaging In any case the contamination control containment will be equipped with HEPA ventilation to control the spread of contamination and minimize worker exposure during size reduction and waste packaging operations
- Workers may size reduce the component using a variety of methods including nibblers, saws and other metal cutting techniques Size reduction may be performed to minimize waste volume and allow packaging in approved containers All waste material will be characterized and packaged in accordance with site Waste Management procedures as described in Section 6 0
- After all equipment and systems have been removed from the room/area the exposed room surface will be radiologically decontaminated and abated for lead and/or PCBs in painted surfaces, as necessary The surfaces will be sampled/surveyed to determine the need for further decontamination and to verify the effectiveness of the decontamination process Room surfaces will typically be decontaminated by wipe down and/or surface scarification methods such as scabbling or other similar technique

As the equipment and systems are cleared from each section of the building workers will complete the removal of all remaining utilities to the area This will include the ventilation systems and all electrical power within the area The section will then be sealed off until demolition of the building commences

4 6 Regulatory Strategy

The 771/774 Closure Project will meet all applicable regulations and compliance agreements, including RFCA, the site RCRA permit, and the Residue Compliance Order #93-04-23-01

4 6 1 RCRA Strategy

Appendix 6 provides a listing of the CHWA/RCRA units within the Building 771/774 Closure Project Closure of permitted and interim status areas will be conducted in accordance with 6CCR1007-3, Parts 264 or 265 The operating record of each RCRA unit will be reviewed to determine the hazardous wastes and the constituents relevant for closure performance Closure Description Documents (CDD) are written to meet the requirements called out in the permit or Interim Status Unit Closure Plan, CDDs will be submitted to CDPHE as necessary, in accordance with the appropriate Closure Plan or this DOP Specifically, the strategy to close the following categories of RCRA units is as follows

- For Mixed Residue tank systems – Piping will be removed in conjunction with the Process Piping Tap, Drain and Removal plan The tanks will be left in place and removed subsequently with the associated Decommissioning workset Tanks will be dismantled, sludges removed and dried if necessary, size-reduced as necessary and packaged for shipment/disposal
- For Rooms – RCRA waste will be removed The units will be "clean closed," i e , washed and certified clean or final closure may be deferred to decommissioning for that room
- For Gloveboxes – Material will be removed, the gloveboxes will be dismantled, size-reduced as necessary, and packaged for shipment/disposal

If a RCRA closure is conducted pursuant to this DOP, the information that would be contained in the CDD will still be submitted to the LRA and the waste associated with that closure activity is remediation waste Throughout the closure process, efforts may be made to bring each RCRA unit to a RCRA stable configuration, thus reducing inspections

4 6 2 CERCLA Strategy through RFCA Compliance

4 6 2 1 Background

RFETS has implemented the CERCLA cleanup process using the RFCA RFCA describes the process to undertake cleanup of the site through the facility disposition process Due to the significant levels of contamination found within the 771/774 Closure Project, Buildings 771/774 are considered to be Type 3 facilities

4 6 2 2 Transition to a CERCLA Regulated Facility

The 771/774 Closure Project will transition to a CERCLA facility during the closure process This transition will occur after deactivation activities are completed within each area For the purposes of RFCA, deactivation is a set of activities that occurs primarily in buildings that were used as part of the nuclear weapons production mission RFCA does not regulate deactivation activities, instead, they are regulated pursuant to the Atomic Energy Act (AEA) and other applicable requirements and overseen by the DNFSB The discussion included here is for the purpose of establishing the end of AEA deactivation and the beginning of RFCA decommissioning

4 6 2 2 1 Deactivation Activities

Deactivation activities remove the cluster of facilities from operation and prepare them for turnover—possibly to another contractor—for decommissioning or conversion/release to a new use meeting applicable safeguards, hazardous category or other completion criteria Specific deactivation activities include developing work summary plans, IWCP development, removal of hazardous and non-hazardous materials, holdup removal and emptying storage areas to reduce fire loading Activities may include inventory and removal of unattached hazardous materials from the facilities and immediate areas, such as regulated hazardous chemicals, beryllium and gas cylinders RCRA unit closures may be completed (waste generated in these closures would be process waste) An economic disposition determination shall be made for unneeded property In general, minimal deactivation will be conducted in B771/774 since the intent is to decommission the facility as soon as possible

Physical Deactivation activities reduce the potential liability and risks posed by excess contaminated equipment, RCRA issues and general hazards The deactivation work included within Physical Deactivation also results in additional baseline costs reductions by eliminating or further reducing the surveillance and maintenance activities currently required Other activities include the shipping of materials and waste in order to further deactivate areas within these facilities It also may include removal of contaminated tooling that is easily removed and removal of clean equipment, tanks and gloveboxes that have never been integrated within the building systems and are free of contamination Specific activities include

Empty storage cabinets,

Reduce the fire load,

Relocate classified tooling and parts,

Prepare equipment for removal,

Remove miscellaneous and equipment deemed excess,

Remove tooling,

Remove excess chemicals,

Remove radiological check sources,

Complete housekeeping cleanup,

Release excess equipment and material to PU&D,

Properly label contaminants prior to disposal,

Remove hazardous chemicals and materials,

Complete RCRA closure of units not required for Decommissioning,

Identify and label contaminants prior to disposal,

Package and stage waste for treatment, storage and/or disposal, and

Deenergize and secure HVAC units not needed for decommissioning

Completion of representative activities above would be the starting point for decommissioning work regulated by this DOP Current deactivation activities include Tap & Drain and removal of liquid process

piping and closure of Mixed Residue tanks Activities such as waste chemical removal, disposition of excess property, chemical hazards reduction and placement of RCRA units into RCRA stable condition or their closure may occur either during deactivation or decommissioning

4 6 2 2 2 Decommissioning Activities

The following list of examples of decommissioning activities should help delineate that portion of the disposition continuum that is regulated as decommissioning under RFCA and is therefore covered by this DOP

- characterization of contamination
- hazards identification
- decontamination in preparation for release, reuse or dismantlement
- strip out and removal of gloveboxes, ducts and tank/process equipment
- size reduction of gloveboxes, ducts and tank/process equipment
- waste minimization activities associated with decommissioning
- dismantlement
- demolition

Before Decommissioning activities are conducted in accordance with this DOP, the DPP requires a readiness evaluation be conducted The scope of this evaluation will be determined using the site's Activity Screening Process and the Readiness Determination Manual The LRA may participate in the development and oversight of the readiness evaluation

4 6 2 2 3 Waste Management Strategy

RFCA provides that process wastes and wastes generated during deactivation are CHWA/RCRA-regulated, whereas wastes generated during decommissioning are CERCLA-regulated (RFCA ¶¶s 70-71) However, as described above, this project will be engaged simultaneously in deactivation and decommissioning At such times, it may prove safer, more cost-effective and more expeditious from an operational stance, to manage the wastes generated from both activities in the same manner For example, if site personnel engaged in deactivation and decommissioning in different rooms of the same building are generating both process and remediation mixed transuranic wastes, the project manager may choose to store all such wastes in a single area and commingle such wastes in common containers If this practice occurs, the wastes will be managed under CHWA/RCRA in120-day RCRA storage areas However, in most cases, process wastes will be managed separately from remediation wastes Section 6 contains more details As discussed in section 4 6 1, RCRA closures conducted under this DOP can be managed as remediation waste

A variety of means will be employed to enable the worker to ensure compliance with the correct regulation depending on the work being performed Work authorization packages will be reviewed prior to the start of work to ensure that the waste will be properly handled, segregated and categorized as appropriate Additional methods of control may include administrative controls, such as identification of the activity and

regulating agency on the work authorization package and physical controls, such as locking waste containers At all times, process wastes will be managed to the current Federal, State and Local regulations, as mandated by current site procedures Remediation wastes will be managed in accordance with Section 7, Applicable or Relevant and Appropriate Requirements (ARARs)

4 6 2 2 4 Documentation

4 6 2 2 4 1 Administrative Record File

The 771/774 Closure Project Administrative Record File (ARF) is comprised of documents that are considered to be relevant to the selection of this response action This file will be maintained as an ARF until the remedial action is approved A Site Technical Administrative Record Review meeting is held to review the file for completeness and DOE then certifies completion of the file Once the decision document is signed, the file becomes the Administrative Record for the 771/774 Closure Project

The 771/774 Closure Project ARF was created in accordance with the applicable Site and Federal requirements EPA, after consultation with CDPHE when necessary, makes the final determination of whether a document is appropriate for inclusion in an ARF EPA and CDPHE participate in compiling the ARF by submitting documents to DOE RFFO as they deem appropriate DOE RFFO forwards these documents to the RFETS ARF The 771/774 Closure Project ARF will be reviewed and approved by DOE RFFO, EPA, and CDPHE before the file is closed at the signing of this DOP

Four information repositories have been established to provide the public with access to the 771/774 Closure Project ARF A copy of the 771/774 Closure Project ARF is accessible to the public at times other than RFETS normal business hours through the Public Reading Room at Front Range Community College

Information Repositories

U S Environmental Protection Agency
Region VIII
Superfund Records Center
999 18th Street, Suite 500
Denver, Colorado 80202-2466
(303) 293-1807

Citizens Advisory Board
9035 Wadsworth Parkway
Suite 2250
Westminster, Colorado 80021
(303) 420-7855

Colorado Department of Public Health and Environment
Information Center, Bldg A
4300 Cherry Creek Drive South
Denver, Colorado 80220-1530
(303) 692-3312

U S Department of Energy
Rocky Flats Public Reading Room
Front Range Community College Library
3 645 West 112th Avenue, Level B
Westminster, Colorado 80030
(303) 469-4435

4 6 2 2 4 2 Closeout Reports

Completion documentation will be compiled for each of the identified worksets A final Closeout Report will be prepared for the 771/774 Closure Project when work is completed and the analytical data has been received The report will consist of a brief description of the work that was completed, including any modifications or variations from the original decision document The report will also include analytical

results, including the results of any confirmatory sampling taken to verify completion of the action to the specific performance standards A discussion of the quantity and characteristics of the actual wastes produced and how the wastes were stored or disposed will also be provided

The report will state that the goals and objectives of the early action were met and if not, what additional work is required The complexity of the Closeout Report and the level of detail will reflect the scope and duration of the action The expected outline for the Closeout Report is shown below (although the format may change to meet the needs of the project)

- Introduction
- Remedial action description
- Verification that remedial action goals were met
- Verification of treatment process (if applicable)
- Radiological analysis (if applicable)
- Waste stream disposition
- Site reclamation
- Deviations from the decision document
- Demarcation of wastes left in place
- Dates and durations of specific activities (approximate)
- Final disposition of wastes (actual or anticipated)
- Lessons learned

4.7 Building Cleanup Criteria

The purpose of this section is to identify the cleanup criteria (acceptable level) which will be used to release the 771/774 Cluster facilities

4.7 1 Radiological Release Criteria

The purpose of this section is to provide the radiological contamination cleanup criteria for the 771/774 Cluster Section 4 4 Facility Characterization, Appendix 9, Set Description End Points and Hazard Matrix, and the RLCR for this project, identify the contaminants which are expected to be present at the start of decommissioning The characterization information is used to ensure that workers are protected from the hazards in the work area, contamination is contained to protect the environs and the waste generated is properly and safely handled, packaged, labeled and moved

In accordance with RFCA, the residual radiological contamination levels present on building structures, equipment and building debris remaining after decommissioning will meet the EPA's preliminary regulation (40 CFR 196) that calls for an effective dose equivalent (EDE) of 15/85 mrem from the Site in any single year above background Accepted industry standards for the release of materials are identified in "Radiation Protection of the Public and Environment", DOE Order 5400 5 as referenced in RFCA and *Termination of Operating Licenses for Nuclear Reactors*, NRC Regulatory Guide (RG)1 86, as referenced

in *the Health and Safety Practice Transfer and Unrestricted Release of Property and Waste,* P73-HSP-1810 Appendix 1

4 7 2 Equipment Unconditional Radiological Release Criteria

The unrestricted release of equipment to be removed from the site will comply with the RFETS Radiological Control Manual, the Health and Safety Plan (1-P73-HSP-1810, Appendix 1), DOE Order 5400 5, "Radiation Protection of the Public and the Environment" (Figure IV-1), NRC RG 1 86 and applicable radiation protection implementing procedures (For information, NRC RG 1 86 specifies the release criteria as less than 100 dpm/100 cm^2 If 10 CFR Part 834 is approved, all applicable practices and procedures will be reviewed and modified accordingly to ensure compliance The RFETS Radiological Control Manual currently contains the most comprehensive table and includes all of the applicable RFETS radiological limits for the release of materials and equipment

4 7 3 Beryllium Release Criteria

The beryllium release criteria and survey methods will conform to current RFETS policies and procedures Building surfaces and equipment suspected of being contaminated with beryllium will be surveyed to assess the level of contamination The surface contamination housekeeping limit for beryllium is 2 $\mu g/100cm^2$ Current RFETS practice for protecting personnel from beryllium is to utilize the ALARA (As Low As Reasonably Achievable) principle This includes the use of engineering controls to minimize exposure, medical screening of personnel, and the reduction of limits and the proposed establishment of lower action levels The limit for beryllium is currently being reviewed and a lower action level is being considered The airborne action level for beryllium is 0 5 $\mu g/m^2$ All personnel are trained in beryllium awareness and qualified industrial hygiene personnel perform all sampling for beryllium

4 7 4 Asbestos Containing Materials (ACM) Release Criteria

Prior to and during the course of the closure project a comprehensive assessment and abatement program will be implemented in accordance with the OSHA Standard 1926 1101 and the site specific Heath and Safety Practices Manual OSHA-qualified personnel will perform characterization, sampling/survey and abatement An airborne room clearance level will be used for all areas in which asbestos abatement is conducted The levels are as follows

- 0 01 fibers/cc utilizing the phase contrast microscope means of analytical technique
- 70 structures/mm utilizing the transmission electron microscopy technique

4 7 5 Polychlorinated Biphenyls (PCBs) Release Criteria

The 771/774 Cluster's building surfaces will be below the release limit for PCB contamination The limit for release of PCB containing material is less than 50 parts per million (ppm)

4 8 Project Approach Summary

The 771/774 Closure Project will take a number of years to complete As the work progresses there will be cases where circumstances are not as they were predicted Therefore, rather than writing a document which will detail each step to be taken, this project has taken the approach of detailing the methodologies

to be used, rather than explicit decisions In doing so, it allows more work to be done in a shorter time, as work will not be delayed until the final planning is completed for all 81 worksets Rather, as planning is completed for each workset, work will be allowed to progress in parallel with planning for future worksets This process also allows the project to easily integrate lessons learned on prior worksets into the planning for future worksets

All 81 worksets have been identified and prioritized The criteria for workset identification and priority are located in Appendix 3 By utilizing this criteria the worksets were prioritized in an order that allows both work on multiple worksets as well as planning for needed staging areas within the facility

Figure 4-2 details the overall methodology for closure Within this approach, the facility is broken down into discrete worksets These worksets, which consist of a room, a group of equipment, or a separate piece of equipment, are then given endpoints From this point on, planning is done on a workset-by-workset basis Using the endpoints, tasks are drafted for the activities to be performed These tasks are evaluated based on costs and risks, in order to finalize the planned tasks Based on the characterization needs identified in the RLCR, additional characterization is performed on the workset Lessons learned from other worksets are evaluated to determine if the draft tasks need revision A JHA is performed on the tasks to determine the appropriate controls to mitigate or eliminate risks With this information a final approach for the workset will be determined (Note the flowsheet from a generic workset is provided in Appendix 5 for information) The activity will be evaluated using the site's Activity Screening Process and the Readiness Determination Manual and a determination of readiness will be conducted if necessary Only after the completion of these preparatory actions will the tasks then be implemented In the event that an unexpected situation is uncovered, the Site's procedure is to stop the evolution at that point, evaluate the hazard, determine appropriate protective measures and other actions necessary to proceed safely and in compliance with all rules and regulations and with these measures approved and in place, proceed with the activity Daily reports are generated to summarize progress and problems encountered These reports will be provided to the LRA and DOE

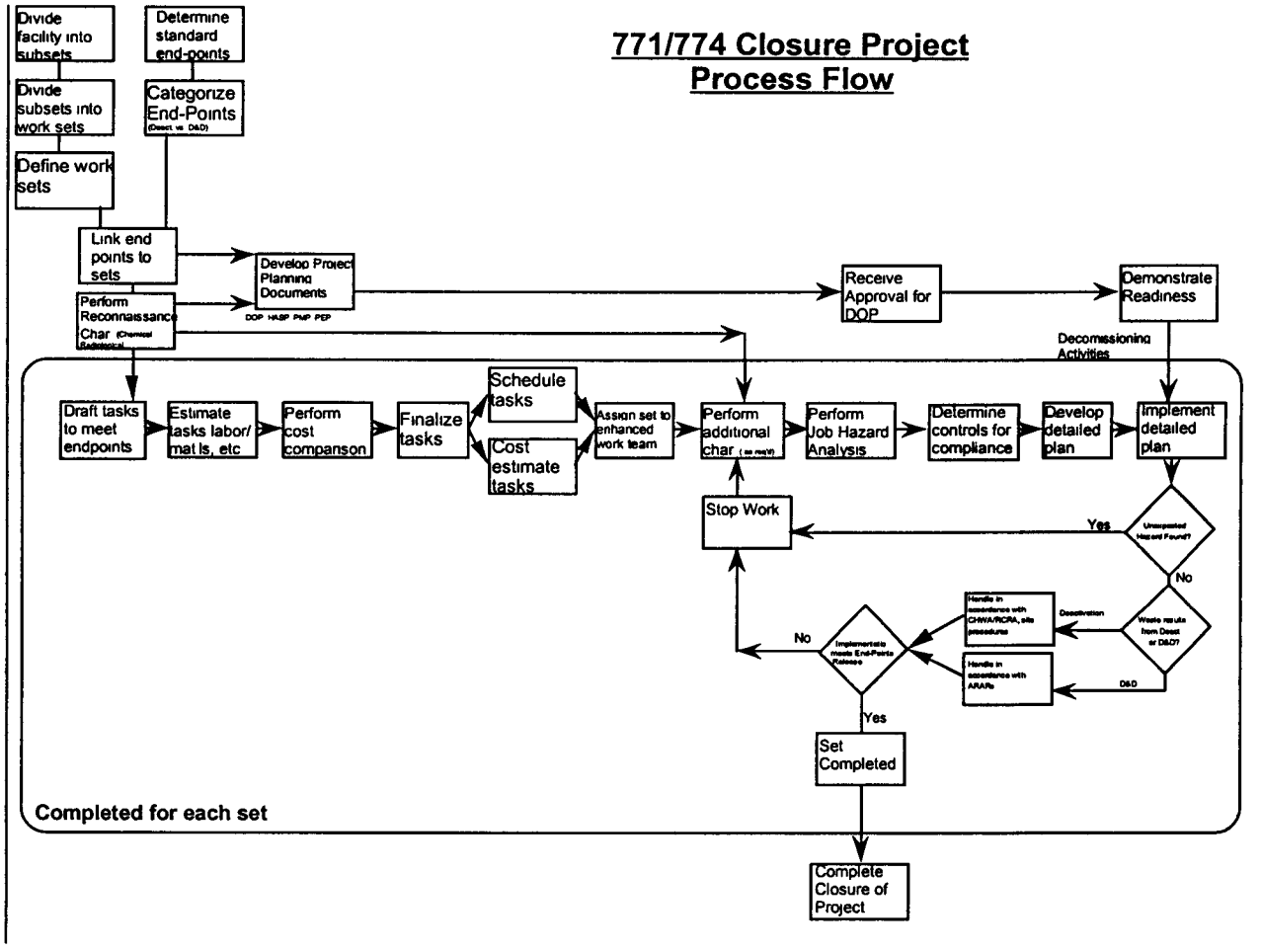

Figure 4-2 Project Approach Flowchart

All of the above work is governed by strategies that encompass the entire project Details on these strategies are found in the sections listed below

- Health & Safety (Section 5)
- Waste Management (Section 6)
- Compliance with ARARs (Section 7)
- Environmental Consequences of the Action (Section 8)
- Quality Assurance (Section 9)

5. Health & Safety

This section describes the work controls associated with the 771/774 Closure Project As prescribed in DOE Order 440 1, Worker Protection Management for DOE Federal and Contractor Employees, the project must comply with the OSHA construction standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1910 120 and 1926 Under these standards, a Building 771/774 Closure Project-Specific HASP has been prepared to address the safety and health hazards of each phase of operations In addition, the DOE Order for Construction Project Safety and Health Management, 5480 9A, applies to this project This order requires the preparation of JHAs to identify each task, the hazards associated with each task, and the precautions necessary to mitigate the hazards

To comply with the health and safety standards specified, an Integrated Safety Management (ISM) process has been initiated and will be continuously implemented The ISM process is illustrated in Figure 5-1 and structured around five core principles

(1) define the scope of work,

(2) analyze hazards,

(3) develop and implement controls,

(4) perform work within controls, and

(5) provide feedback and continuous improvement

The objectives of the ISM and HASP are to

- Protect the employees, co-located workers, the public and environment from hazards during decontamination ad decommissioning
- Ensure appropriate safety management is administered throughout decontamination and decommissioning
- Develop and maintain a high level of health and safety awareness that is practiced by all levels of management, supervision, and employees
- Meet the goal of zero lost time accidents for the entire decontamination and decommissioning process
- Foster excellent safety communications between all Site work groups that are affected by the decontamination and decommissioning of the 771/774 Closure Project to ensure the intent and goals of RFCA are met

- Train project personnel so they are capable of completing assigned tasks safely and in compliance with the applicable environmental and safety regulations

5 1 Preliminary Hazard Analysis

During the initial planning for the project, a Preliminary Hazard Analysis Overview (Tables 5-1 through 5-4) was produced to evaluate the potential health and safety hazard baseline for the project This Preliminary Hazard Analysis includes an evaluation of the types of hazards associated with each phase of the project The process will facilitate work by identifying preliminary key hazards up front (Tables 5-1 through 5-4) and incorporating risk management into the job planning process The development and use of a JHA for specific activities developed during the planning and engineering phase of the project will be used to meet the need for continuously updated documentation of Preliminary Hazard Analysis baseline information

All operations shall be conducted in accordance with the guidance of the Health & Safety Plan (HASP) The HASP will be revised as required by project operations and facility configuration changes at each step to ensure compliance The Preliminary Hazard Analysis baseline information will be continuously updated and augmented using the JHA process

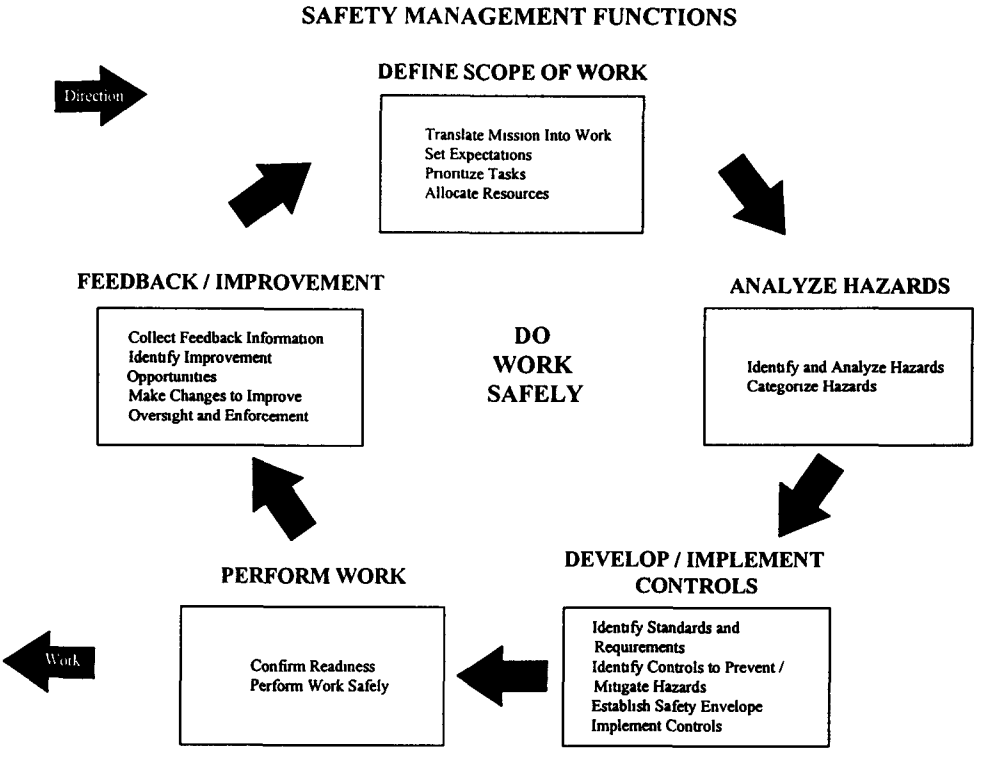

Figure 5-1 Integrated Safety Management Process

Table 5-1 Planning and Engineering Phase

Major Work Task	Hazard	Cause	Preventative Measures
Perform building walkdowns to identify IWCP work steps and engineering order requirements	Tripping, falling, exposure to chemicals, hazardous substances and/or radioactive materials Also, exposure to noise hazards	No planning, lack of communicating between work groups, improper use of RWPs, not following room or building instructions	• Develop JHAs and IWCP Work Packages • Conduct effective pre- evolution briefings • Follow all building instructions • Ensure all personnel have been properly trained before entry • Adequate RWPs are developed and followed
Move office equipment and furniture to prepare for D&D activities	Back strains, pinch points, extremity injuries due to falling objects or moving vehicles	Improper lifting of equipment, careless handling of equipment, improper planning and walkdowns No continuing observations or use of the buddy system	• Proper training conducted and documented • Use of the buddy system • Proper use of forklifts and trucks including operating alarm systems and brakes • Planning meetings and briefings completed • Proper use of JHA and IWCP Work Package • Adequate RWPs are developed and followed
Perform hazard analysis characterization activities This includes asbestos, chemical, lead and radiological sampling	Overexposure to substances, accidental inhalation of substances, absorption into skin of substances, eye and skin irritation Exposure to radiological contamination	Improper or no use of prescribed PPE, RWP lack of proper planning, not following sampling procedures correctly, improper transport or handling of samples	• Follow JHA and IWCP Package • Wear prescribed PPE properly • Conduct planning meetings and briefings • Follow RWP • Ensure all required training has been completed

Table 5-2 Decontamination Phase

Major Work Task	Hazard	Cause	Preventive Measures
Perform radiological decontamination operations	Exposure to radioactive materials internally and externally Cell damage and damage to internal body organs can occur with acute overexposure to radioactive materials Improper use of scabbling or other decontamination equipment can injure extremity or other limbs of workers by causing gash or cutting wounds	Improper clean up techniques including Improper containment, decontamination or PPE usage Improper ventilation usage Improper waste disposal and handling No or improper training in the proper use of decontamination equipment	• Ensure all workers are trained as Rad Worker II • Ensure all RFETS radiological prerequisites are met prior to job commencing • Develop and implement JHAs and IWCP Work Package for the job • Ensure all medical, equipment, training, and PPE req are met • Ensure that proper radiological monitoring is performed • Follow the RWP instructions, including ALARA review if required

Table 5-3 Dismantlement Phase

Major Work Task	Hazard	Cause	Preventative Measures
De-energize work areas and remove cables and wiring	Electrical shock to body, cutting of extremities or body parts using wire strippers or other hand tools, falling off ladder or scaffolding, if used Exposure to radiological contamination	LO/TO not used properly, all workers not informed of LO/TO status Improper use of hand tools, ladders or scaffolding Improper lighting in room can cause improper use of equipment as well Improper or no use of RWPs	• Utilize lockout and tagout procedures properly • Inspect all hand tools before use • Ensure all workers are trained in ladder, scaffolding and fall protection measures before using this equipment • Develop and utilize IWCP Work Packages and task specific JHAs • Perform work area walkdown and conduct proper planning meetings and briefings • Ensure all worker training is current • Adequate RWP developed and followed
Move equipment out of rooms or area and transport utilizing forklifts, pallet jacks, or pick up trucks	Back injuries, pinching, and extremity damage by dropping or falling objects Internal and external body injuries by vehicle impact Eye injuries by poking or dust particles in eye Noise hazards Exposure to radiological contamination	Improper lifting techniques, job flow not planned properly, pre job walkdowns not performed, vehicle alarm systems not working, buddy system not used, lack of attention to detail, worker fatigue or no use or improper use of PPE Improper or no use of RWP	• Perform pre job walkdowns • Develop JHAs for job • Use buddy system • Ensure vehicle alarm and braking systems are working properly • Utilize PPE properly • Perform proper lifting techniques • Perform pre job warm up exercises before lifting • Do not attempt to move items that are stacked too high • Cover all sharp edges with taping material • Adequate RWP developed and followed
Cut out piping systems in rooms or work areas	Cutting of body limbs or body parts with mechanical equipment Piping falling on feet, pinch points of rolling pipe, liquid splashes if piping is not drained, springing of piping into body when cut Exposure to radiological contamination	Improper use of mechanical equipment including no training of equipment being used, piping not rigged or restrained properly, piping not drained prior to cutting Improper or no use of RWP	• Proper training with cutting equipment • Develop and utilize IWCP Work Packages and JHA for job tasks • Rig and restrain piping properly • Utilize pipe caps after cutting to keep debris from falling out and cover sharp edges of pipes after cutting • Ensure piping has been properly taken out of service • Utilize proper PPE as described in the JHA and RWP • Adequate RWP/ ALARA review developed and followed • Awareness of the possibility of encountering "hidden" contamination and adequate characterization to identify such contamination

Table 5-3 (continued)

Major Work Task	Hazard	Cause	Preventative Measures
Rig piping and equipment out of rooms	Bodily injuries due to falling objects or pinching of workers due to space limitations Exposure to radiological contamination	No rigging plan, improper rigging techniques, improper worker body positioning Improper or no use of RWPs	• Develop rigging plan • Comply with all RFETS standards for rigging • Develop JHA and implement • Perform pre job walkdown and conduct pre-evolution • Walkdown rigging path - all phases • Perform pre and post job inspections on all rigging equipment • Ensure all workers are properly trained • Adequate RWP developed and followed
Packaging waste into containers for storage and shipment	Pinching of extremities on container lids, barrels rolling on feet, back strains, foot injuries as vehicle wheels impact or roll onto extremities, cuts/gashes of hands by tooling Exposure to radiological contamination	Improper lifting and handling techniques, wrong tooling used to put lids on containers, pallet jack or forklift ramming into workers, job rushed or not planned properly Improper or no use of RWPs	• Develop JHA and implement • Review lessons learned from previous waste handling operations • Develop proper tool list before starting job • Ensure all waste containers are properly staged before starting job • Ensure all building notifications are made before moving and handling waste • Follow all RFETS requirements for waste handling and movement • Adequate RWP developed and followed
Cut out and remove gloveboxes and tanks in rooms or work areas	Pinch points, foot and hand injuries, cutting of hands/arms, eye and head injuries, burning of skin or extremities Exposure to radiological contamination	Improper use of grinders or no guards on grinders, cramped working conditions, bad lighting, limited vision, breaking of leaded glass, plasma slag burns through clothing, improper use of PPE Improper or no use of RWPs	• Proper training with cutting equipment • Develop and utilize JHA for job tasks • Rig and restrain gloveboxes properly • Utilize pipe caps on glovebox piping after cutting • Ensure gloveboxes have been properly taken out of service before work starts • Utilize proper PPE as described in the JHA • Perform tooling inspections before each use • Adequate RWP/ALARA review developed and followed

Table 5-3 (continued)

Major Work Task	Hazard	Cause	Preventative Measures
Construct and utilize scaffolding to perform job tasks	Fall hazards, workers struck by falling objects, hand injuries Exposure to radiological contamination	No use of fall protection, improper training, no use of PPE, improper use of tooling, improper rigging and transport of scuffling pieces, no scaffold inspections, scaffold collapse Improper or no use of RWPs	• Proper training for scaffold erection and use • Fall protection and rigging training • Proper use of PPE • Develop JHA • Perform documented scaffolding inspections • Ensure all scaffolding is tagged properly • Ensure all toe boards and side rails are in place • Adequate RWP developed and followed
Perform decontamination operations	Extremity injuries of hand and feet by gouging, cutting or impact Inhalation, ingestion or skin exposure to radioactive materials and ammonia vapors Electrocution Falls	Improper or no training on equipment used for decontamination, improper work area ventilation, improper use of PPE, no job planning No LO/TO of work area No fall protection	• Conduct mock up training on decontamination equipment and stripcoat operations • Develop JHA for job tasks • Ensure work area is properly ventilated before applying stripcoat • Ensure LO/TO operations have been performed • Wear prescribed PPE as determined by IH&S and Rad Protection • Utilize fall protection, when required • Follow all JHA and RWP requirements • Use appropriate engineering controls to reduce possible airborne contamination
Perform final cleanup of building/structure	Tripping, falls, head wounds, pinch points, punctures, contusions, skin contamination, inhalation, absorption of radioactive materials	Housekeeping, falling objects, non-use of PPE, improper use of PPE, sharp edges or sharp objects not protected, no fall protection, improper ladder use	• Perform weekly housekeeping inspections • Utilize fall protection, when applicable • Develop JHA for job task • Utilize PPE • Follow all ALARA reviews, JHAs, and RWP

Table 5-3 (continued)

Major Work Task	Hazard	Cause	Preventative Measures
Perform final survey of building	Falls, head wounds, electric shock, abrasions, cuts, pinches Radiological contamination	No fall protection, improper use of instrumentation, working in tight spaces, tripping hazards, bad housekeeping, improper termination of wiring Prior operations exposing contaminated surfaces during decommissioning	• Develop JHA • Perform pre job walkdowns • Utilize fall protection, when required • Complete ladder training, as required • Utilize two person rule when working in elevated locations • Procure confined space permits and training, when required • Follow all JHA, RWP and Final Survey Plan requirements • Survey in accordance with approved site procedures •PPE per RWP • Train personnel

Table 5-4 Demolition Phase

Major Work Task	Hazard	Cause	Preventative Measures
Perform demolition activities of building/structure	Body contusions, head injuries, suffocation, fatalities, breathing hazards	Wetting of concrete surfaces not utilized, barriers not used properly, thorough inspections of work area not performed prior to demolition activities, lack of attention to detail	• Develop job JHA and IWCP Work Packages • Perform pre job walkdowns • Utilize PPE as prescribed by IH&S • Maintain wetting of debris with fire hoses as demolition occurs

5 2 Job Hazard Analysis

The detailed technical approach to decommission an area/room will be developed and approved in accordance with the IWCP process The IWCP Work Package contains detailed instructions for performing work on site and contains specific controls and requirements to ensure protection of the workers, public, and environment Given the tasks identified in the specific IWCP Work Package and consistent with the ISM process and the HASP, the work supervision, craft and industrial hygiene personnel will conduct an EWP session to evaluate all work tasks for the potential to injure or damage personnel, property or the environment This JHA will describe the hazards as well as the actions necessary to eliminate or mitigate those hazards (i e , training requirements, protective control measures, monitoring requirements and special equipment needed for specific job steps)

5 3 Monitoring

Occupational monitoring requirements for individual work tasks will be identified during the EWP session and documented in the JHA Typical monitoring activities are summarized on Table 5-5

5 3 1 Chemical Hazard Monitoring

Per the HASP, the need for chemical hazard monitoring will be determined by the Project Safety Officer or designee All air sampling and monitoring will be performed in accordance with approved National Institute of Occupational Safety and Health or OSHA sampling methods using either direct reading instrumentation or personal air sampling as directed by the IH&S lead or designee All instrumentation used will be calibrated in accordance with factory recommendations

Table 5-5 Typical Monitoring Activities

Hazard	Exposure Control Limit	Monitoring Method	Frequency of Monitoring
Exposure to hazardous substances such as lead, asbestos or any other material(s) identified that are respirable	Permissible Exposure Limits (PEL's) are based on 8 hour Time Weighted Average (TWA) exposure and Short Term Exposure Limits (STEL's) set forth by the Occupational Safety and Health Administration (OHSA) or the American Conference of Governmental Industrial Hygienists (ACGIH), whichever is more conservative	Many hazardous substances are monitored using a personal air sampling pump such as a Gilair or SKC to obtain a continuous sample of the most at-risk worker's breathing zone The sample media, sampling technique and analysis method are unique to the substance being monitored and are specified by OSHA or the National Institute for Occupational Safety and Health (NIOSH)	Continuously during work, short term samples as required to document STEL's Continuous area monitoring and clearance sampling as required
Silica dust	0 05 mg/m^3	Aerosol monitor such as an MIE PDM-3	As required by the JHA
Heat stress	The need to regulate periods of work and rest are determined using worker dress-out, work activity and thermal environment	Monitor the thermal environment with a wet bulb temperature monitoring device such as the WBGT Worker condition can be checked using body temperature, pulse and visual assessment	Varies by conditions and work task
Noise	85 dB continuous for an 8hr exposure period, expressed as a Threshold Limiting Value (TLV)	Monitor work environment using a sound level monitor Use noise dosimeters on highest risk workers	Daily and as required during tasks by the JHA or conditions

5 3 2 Radiological Hazard Monitoring

Per the HASP, air monitoring within the work areas will be performed using portable Continuous Air Monitors (CAMs), high volume and low volume air sampling The use of portable CAMs allows the project flexibility in monitoring locations, resulting in more effective monitoring Training on the use and response of these monitors will be provided to all project personnel Personnel monitoring for radiological hazards

will be identified in RWPs and the ALARA job reviews All radiological monitoring will be performed in accordance with the procedures contained in the RFETS HSP Manual, RFETS Radiological Control Manual, and the Radiological Safety Procedures (RSPs)

The requirements for monitoring radiological hazards from the RFETS Radcon Manual are individualized to a particular work task and are documented in the RWP Typical monitoring for radiological hazards will include

- Airborne - Monitored using high or low volume sampling pumps Sample media is typically glass fiber filter and must be counted for alpha and/or beta-gamma activity to determine the exposure Exposure is measured in Derived Air Concentrations (DAC's) and is dependent upon the particular radionuclide(s) present (e g , Pu-239 DAC is 2E-12 microCuries per milliliter [µCi/ml]) The frequency of monitoring is dependent upon the work task and contamination levels and is specified in the RWP

- Contamination - Monitored by smear sample and/or direct measurement with a frisking instrument such as a Bicron Frisktech Limits for contamination are listed in the RFETS Radiological Control Manual and are dependent upon the particular radionuclide present and are expressed in units of dpm/100 cm^2 Frequency of monitoring will include routine surveys (shiftly, daily, etc), as required by the RWP and at the discretion of Radiological Controls personnel

- Radiation – Radiation surveys are performed using instrumentation that is capable of detecting the type and energy of emitted energy present and is expressed in units of mrem/hr These exposure rates are used to determine personnel exposure estimates, provide data to ensure that all exposure is As Low As Reasonably Achievable (ALARA), and to properly control areas of potential exposure to personnel Personnel exposure is monitored using Thermal Luminescent Dosimeters (TLDs) and the results become permanent exposure records Frequency of monitoring will include routine surveys, as required by the RWP and at the discretion of the Radiological Controls personnel

5 3 3 Air Monitoring

The K-H Air Quality Management (AQM) organization provides monitoring support for RFETS The existing Radioactive Ambient Air Monitoring Program (RAAMP) continuously monitors for potential airborne dispersion of radioactive materials from the site to the surrounding environment Thirty-one samplers compose the RAAMP network Twelve of these samplers are deployed at the site perimeter and are commonly used to measure potential off-site impact The others are used should there be a need to assess local (i e , on-site) impacts During demolition activities, on-Site samplers located near the demolition area will be used to characterize the contaminants that may have become airborne due to the demolition activities Samples will be collected weekly and will be screened to identify any periods that may have yielded higher than expected emissions The screening analysis will allow quicker feedback to project staff than is possible when the samples are subjected only to the more time-intensive routine isotopic analysis

6. Waste Management

Waste types that will result from the decommissioning of the 771/774 Closure Project are radioactive, mixed, hazardous, toxic and solid waste In general, once this DOP is approved and Decommissioning work commences, waste generated as a result of both Deactivation activities associated with a D&D workset and Decommissioning activities will be remediation waste and will be managed as CERCLA waste in accordance with relevant RFETS waste operations procedures Some waste, specifically

- liquid waste drained from process systems and idle equipment,
- waste chemicals, and
- pre-existing containerized process,

will continue to be RCRA process waste and will be managed as such State and Federal regulations and DOE Orders have been incorporated into the RFETS waste operations procedures Table 6 1, Summary of Waste Management for the 771/774 Closure Project, identifies the estimated volumes, types of waste anticipated, and the final dispositioning for the waste form

6 1 Transuranic Waste

Transuranic waste (TRU) is defined as waste that is contaminated with alpha-emitting transuranic radionuclides having half-lives greater that 20 years and concentrations greater than or equal to 100 nCi/gram at the time of assay Transuranic waste as defined will result from the decommissioning of Building 771/774 Duct and glovebox work activities will result in the production of TRU waste TRU and TRU Mixed Waste will be generated, characterized and packaged in accordance with the RFETS TRU Waste Management Plan (CA) and the RFETS WIPP Waste Characterization Quality Assurance (QA) Project Plan

6 2 Low Level Waste

DOE Order 5820 2A defines Low Level waste as "Waste that contains radioactivity and is not classified as high-level waste, transuranic waste or spent nuclear fuel or 11(e)2 by-product material as defined by this Order Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low level waste, provided the concentration of transuranic is less than 100 nCi/g " Based on economical and technical constraints items will be decontaminated to free release conditions Items that have been decontaminated to a free release condition (Reference Radioactive Material Transfer and Unrestricted Release of Property and Waste, 1-P73-HSP-1810) will be transferred for use at a different location within RFETS, for use at a different DOE facility, or sent to the Property Utilization and Disposal (PU&D) organization for appropriate handling Only materials that meet recycle/reuse criteria identified in the Property Management Manual will be sent to PU&D As appropriate, low level and low level mixed waste will be generated, characterized, and packaged in accordance with the RFETS Low Level WMP

6.3 Mixed Waste

Mixed waste means waste that contains both hazardous waste and source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954 (42 USC 6903(41)) Mixed waste is characterized as either low level or TRU based upon the amount of radioactivity at the time of assay The type of mixed

waste that may be generated includes, but is not limited to, radioactively contaminated lead, glovebox gloves, used pump oil and leaded glovebox windows Mixed waste generated from decommissioning activities may be stored and treated (see Section 7 3) in temporary units prior to shipment to an approved disposal site If the project chooses to manage mixed waste as process waste instead of remediation waste, the process waste will be managed in accordance with the generator requirements or the RCRA permit requirements Management of remediation waste within a CERCLA unit will be conducted in accordance with the substantive requirements of the project ARARs

6 4 Hazardous Waste

Hazardous waste is defined as waste that is listed or exhibits the characteristics of corrosivity, ignitability, reactivity, toxicity or that is listed in 6 CCR 1007-3, Section 261, or 40 CFR 261, Subpart D The 771/774 Closure Project anticipates some amount of hazardous waste in addition to the mixed waste mentioned in Section 6 3

6 5 Industrial Waste

Industrial waste is characterized as that waste which meets RCRA Subtitle D requirements Industrial waste will be generated as a result of the 771/774 Closure Project This waste will be managed in accordance with applicable rules and regulations

6 6 Toxic Substances Control Act Waste and Mixed Waste

The Toxic Substances Control Act (TSCA) addresses all chemical substances manufactured or processed in or for the United States A chemical substance is defined in broad terms as any organic or inorganic substance of a particular identity including those substances identified in 15 CFR, Paragraph 2602(2)(A)(I-vi) and which may present unreasonable risk of injury to health and the environment Of particular significance to the 771/774 Closure Project are PCBs as regulated under 40 CFR Part 761 Further segregation may occur as in-process characterization is performed in support of the waste determination

In addition, other suspect PCB containing materials include oils, paints, adhesives and roofing tars Characterization of suspect materials will be performed in suspect areas prior to decommissioning of that area Materials characterized as TSCA regulated will be managed in accordance with 40 CFR Part 761 if determined to contain $\geq$ 50 ppm PCBs

6 7 Waste Minimization

Waste minimization, as committed to in the FY97 Waste Minimization Program Plan, will be integrated into the planning and management of the 771/774 Closure Project decommissioning wastes Project Management and Decommissioning workers will incorporate waste minimization practices into work procedures Unnecessary generation of radioactive and mixed waste will be controlled by utilizing work techniques that prevent the unnecessary contamination of areas and equipment, preventing unnecessary packaging, tools and equipment from entering radiologically contaminated areas and reusing contaminated tools and equipment when practical Waste minimization will be accomplished using a waste life cycle cost approach and an economic disposition plan has been developed to use as guidance

If the cost to demonstrate that the item is not contaminated exceeds the cost for waste disposal, the item will be disposed of as waste in accordance with the Property Management Manual, 1-MAN-009-PMM The evaluation may include disassembly, decontamination and survey costs Elimination and reduction of waste generated as a result of decommissioning is a high priority Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented Most of the bulk building structural material is expected to be free released and will be removed from the Site for recycle or disposal as appropriate Table 6-1 identifies the amount and types of waste which are expected to be generated

6 8 Waste Management Strategy

The overall strategy for managing waste resulting from the decommissioning of the 771/774 Closure Project is to evaluate the generation and waste management on a workset-by-workset basis In general waste materials will be sorted at the time of removal and prepared for further decontamination, survey, recycle, processing and packaging in another area of the771/774 Closure Project, away from the point of generation The existing RFETS Waste Management Program and procedures will be used to ensure the waste has been generated, packaged and surveyed to meet the final disposal Waste Acceptance Criteria (WAC) Materials identified for transfer to PU&D include, but are not limited to, office equipment such as desks, chairs, tables, carts, bookshelves, equipment and instruments which are located in non-contaminated areas or have been located in contaminated areas but confirmed as non-contaminated through radiological survey Utilizing waste minimization, (Section 6 6), the maximum amount of materials (economically feasible) will be released and sent to PU&D for disposition The waste generation estimates anticipated as a result of the 771/774 Closure Project are summarized in Table 6-1 The types and volumes of waste have been estimated based on the following assumptions

- WIPP facility will be on-line and approved to accept TRU/TRU-Mixed waste in June 1998,
- The RFETS on-site Waste Operations facility will accept and assay all waste prior to shipment to off-site waste disposal facilities,
- Contents of the 771 office area, 771 trailer complex, 129 maintenance shop, Building 770 and the carpenter shop are non-contaminated The contents will be free-released to PU&D (Note free release requires surveys to confirm the absence of contamination, see sections 4 7 1 and 4 7 2),
- Non contaminated rubble and debris will be disposed of at an approved landfill, in accordance with solid waste regulations,
- One hundred percent of the Building 771 and 774 internal structures (floors, walls, ceilings) are contaminated,
- No attempt will be made to decontaminate the Building 771 and 774 internal structures or contents to a free-release category,

- Decontamination methods will be utilized as necessary to reduce the Building 771 and 774 structures to a low level waste category,

- Building 771 and 774 structures will be disposed of as low level waste, and

- All non-contaminated lead will be shipped to PU&D for recycling

The quantity of crates and drums were estimated using the following information On average, 7 8 cubic feet of material can be contained in a 55-gallon drum while 112 cubic feet can be contained in a standard waste crate These containers were used in Table 6-1 for illustration and comparison, as much as possible, waste materials will be placed into standard waste crates or other large bulk containers to gain efficiencies of scale The number of standard waste containers (crates) was calculated by dividing the volume by 112 cubic feet and rounding up to the nearest whole number The number of 55 gallon drums was calculated by dividing the volume of waste designated for containment in drums by 7 8 cubic feet then rounding up to the nearest whole number

During the detailed planning of the individual D&D worksets, the waste will be characterized and waste streams will be identified such that the waste can be properly packaged to meet the acceptance criteria for the ultimate disposal site Waste generator instructions, tailored for the available disposal sites, will be developed Waste certification approval is required to verify proper compliance, a trained, qualified individual will be utilized in the building for this purpose

6 9 Waste Characterization

The characterization process discussed in Section 4 0 was used to estimate the type and volume of waste to be generated by the project The Building 771 Waste Stream and Residue Identification and Characterization (WSRIC) book is used to describe each of the processes which are performed in Building 771 The WSRIC descriptions identify the different types of chemicals used and wastes which are generated in completing the various processes The WSRIC is being used to assist in characterization of the residual materials left in Building 771 (Reference Section 4 0)

In general, waste generated from decommissioning includes contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, gloveboxes and facility structural materials Decontamination will be performed to remove radiological contamination and hazardous constituents as appropriate Newly discovered containerized hazardous materials and excess chemicals will be managed as process waste Containerized or packaged mixed waste will be stored on-Site, in accordance with the Hazardous Waste Requirements Manual until the material can be shipped for final disposal Initial Waste Volume Estimates are identified in Table 6-1

The 771/774 Closure Project contains many pieces of equipment which will be released to PU&D for redistribution, disbursement or recycle as scrap material

6.10 RCRA Units

A complete listing of RCRA units located in Buildings 771/774 is located in Appendix 6 of this DOP

6 11 Idle Equipment

Presently, hazardous materials contained in idle equipment are processed by building operations personnel in compliance with the Management Plan for Material Contained In Idle Equipment, 94-MP/IE-0017 Hazardous materials contained in idle equipment in the 771/774 Closure Project have been identified for dispositioning during deactivation Remaining idle equipment will be managed in accordance with the Idle Equipment Consent Order (97-08-21-01 "Compliance Plan for Management of Material Contained in Idle Equipment") During decommissioning and residual wastes will be considered remediation wastes

6 12 Off-Site Release of Wastes and Applicability

CERCLA wastes that are managed on-site must comply with the substantive requirements of the proposed ARARs for the project RCRA is an ARAR for the Building 771 decommissioning project and making a Land Disposal Restricted (LDR) determination is a substantive requirement Currently, there are no plans to dispose of the RCRA-hazardous remediation wastes on-site Therefore, in accordance with the requirements in 6 CCR 1007-3 Section 268 7, the LDR determination applies to the waste at the point of generation For wastes that will be managed or disposed off-site, it is the subsequent administrative requirements under Part 268 (e g , storage prohibition) that do not apply on-site until the waste is shipped off-site for management and disposal All waste leaving the site must be shipped to an KH-approved treatment or disposal facility

In addition, the facility accepting CERCLA wastes must meet the requirements of the CERCLA "Off-Site Rule" (40 CFR 300 440) The primary purpose of the Off-Site Rule is to clarify and codify the CERCLA requirement to prevent wastes generated from remediation activities conducted under CERCLA from contributing to present or future environmental problems at off-site waste management facilities Only facilities that meet EPA's acceptability criteria can be used for off-site management of CERCLA waste The Off-Site Rule applies to both hazardous and non-hazardous wastes generated from remedial and removal actions funded or authorized, at least in part, by CERCLA

Release of non-contaminated material, debris and equipment from a site contaminated with hazardous materials is accomplished by

- demonstrating the materials or wastes do not exhibit any of the characteristics of hazardous waste and are not listed hazardous waste, as identified in Subpart C of 6 CCR 1007-3 SS261,
- or are excluded under the provision in 40 CFR 268,Subpart D, and
- the off-site waste management facility meets requirements of the CERCLA Off-Site Rule

Process knowledge and operating history related to the facilities can also be used to segregate hazardous contaminant areas from unaffected areas Further sampling and analysis of wastes may be required during the project to determine if the wastes are regulated as LDR, or if the wastes can be exempted under the "hazardous debris rule " LDR requirements are integrated into RFETS waste and characterization procedures to ensure compliance with designated TSD facilities and on-Site WAC

The release of hazardous and/or mixed hazardous waste from the Site to an off-site waste management facility is accomplished by

- all applicable LDR standards are met,
- meeting all DOT requirements,
- ensuring that the off-site waste management facility meets the requirements of the CERCLA Off-Site Rule,
- using approved waste management vendors, and
- meeting the receiving facility's waste acceptance criteria

Under the "hazardous debris rule" provision, and in accordance with the debris treatment standards defined in 6 CCR 1007-3 §268 45, treated hazardous debris is exempted from the definition of hazardous waste, provided that the debris is treated to the performance or design and operation standards by an extraction or destruction technology and the treated debris does not exhibit the characteristic of a hazardous waste The exempted debris can be disposed in an industrial landfill (6 CCR 1007-3, Section 268, Subpart D) rather than a RCRA permitted landfill (6 CCR 1007-3, Section 268, Subtitle C) Note that these exemptions apply to disposal of certain LL radioactive mixed wastes if they meet the receiving Sites WAC for hazardous debris

TRU and TRU Mixed Waste must meet

- WIPP WAC requirements

6.13 Chemical Compliance Order On Consent

The Compliance Order on Consent for Waste Chemicals, 97-8-21-02, was issued to DOE on August 21, 1997 by CDPHE to establish compliance objectives and resolve RCRA violations concerning management of waste chemicals The "Order on Consent" requires DOE and K-H to manage waste chemicals, unless excluded, in accordance with the Waste Chemical Plan, hereafter call the Plan (See Section 6 0) The Plan provides for the management, storage and disposal of waste chemicals located at RFETS Activities associated with the Waste Chemical Management Plan require completion by December 31, 1999

Waste chemicals located within the 771/774 Closure Project will be managed in accordance with the "Order on Consent " As each facility comes into compliance in accordance with the "Order on Consent," waste chemicals will be managed in regulatory compliance with RCRA

6 14 Individual Hazardous Substance Sites (IHSS)

The Building 771/774 Closure Project has numerous IHSSs located adjacent to it The IHSSs are part of Operable Units 8 and 9 The designation of these IHSSs is based mostly on documented leaks in process

tanks and piping associated with the liquid waste processing operations in Buildings 771 and 774 There are isolated incidents, with the exception of the IHSS 150 1 This IHSS designates the paved area along the north side of the building due to multiple historic spill events This area is the most widely used access for the building, hence the numerous spill/leak events

Table 6-1 Waste Quantities

	Bldg 771	Bldg 774 and B O C	Decontamination	Demolition	Totals
LL					
Boxes	1,381	177	0	8,520	10,078
Drums			2,816		2,816
Cubic Feet	116,004	14,868	20,698	715,680	867,250
LLMW					
Drums	287				287
Cubic Feet	2,109				2,109
Pounds	251,125				251,125
TRU/TRM					
TRUPACT-II SWB	891				891
Cubic Feet	60,321				60,321

B O C Balance of Cluster

6.15 Completion Report

Upon completion of the Project a completion report will be prepared This report will include a listing of the wastes removed from the building, characterization data and waste dispositioning information (e g , size reduction, decontamination, or treatment) which contributed to the final forms and volumes of the wastes resulting from this Project

7. Applicable or Relevant and Appropriate Requirements

Pursuant to RFCA ¶16a, the procedural requirements to obtain Federal, State or local permits are waived as long as the substantive requirements that would have been imposed in the permit process are identified (RFCA ¶17) Furthermore, the method used to attain the substantive permit requirements must be explained (RFCA ¶17c) The following discussion is intended to complement other descriptions provided in this DOP in a manner that satisfies the RFCA permit waiver requirements

7.1 Air

Closure activities have the potential to generate particulate, radionuclide, fugitive dust and Hazardous Air Pollutant (HAP) emissions 5 CCR 1001-3, Regulation No 1, governs opacity and particulate emissions Regulation No 1, Section II addresses opacity and requires that stack emissions from fuel-fired equipment must not exceed 20% opacity Regulation No 1, Section III addresses the control of particulate emissions Fugitive particulate emissions will be generated from demolition and transport activities Control methods for fugitive particulate emission should be practical, economically reasonable and technologically feasible During demolition activities, dust minimization techniques such as water sprays may be used to minimize suspension of particulates In addition, demolition operations will not be conducted during periods of high wind The substantive requirements will be incorporated into a control plan that defines the level of air monitoring and particulate control for the project

CR 1001-3, Regulation No 3, provides authority to CDPHE to inventory emissions Regulation No 3, Part A, Section describes Air Pollutant Notice (APEN) requirements If applicable, RFETS will prepare an APEN to facilitate the CDPHE inventory process

The Kaiser-Hill Air Quality Management organization provides monitoring support for RFETS specifically directed toward compliance with all State and Federal environmental laws originating from the Clean Air Act and its amendments The existing RAAMP continuously monitors for potential airborne dispersion of radioactive materials from the site into the surrounding environment Thirty-one samplers compose the RAAMP network Twelve of these samplers are deployed at the site perimeter and are used for confirmatory measurements of off-site impacts The others are used for backup should there be a need for determining local impacts from closure projects During the demolition of the 771/774 Closure Project, additional monitors within the existing ambient network located in the immediate area of Building 771/774 will be identified The frequency of filter collection and filter analysis at those locations will be adjusted as necessary to provide timely information of potential project emissions Air emissions from strip-out activities will be monitored by the existing effluent air monitoring system currently in place in the facilities' plenums, or other appropriate air monitors

Additionally, the National Emission Standards For Hazardous Air Pollutants (NESHAP) (5 CCR 1001-10, 40 CFR 61 Subpart H) have been identified as a chemical-specific (for radionuclides) ARAR to evaluate potential radionuclide emissions The EDE will be calculated for all radionuclide emissions anticipated from the operations associated with facility closure Estimated controlled radionuclide emissions are not expected to exceed the EPA notification and approval threshold of 0 1 mrem per year EDE (40 CFR 61, Subpart H) Radionuclide emission from the project will be included in the site radionuclide annual report

7 2 Waste Storage

The wastes generated during the closure activities governed by this DOP are remediation wastes (See RFCA ¶25bf and RFCA Appendix 3, the Implementation Guidance Document, section 3 1 10)

Remediation waste generated during this removal action will be evaluated consistent with the requirements of RCRA Part 261 Identification and Listing of Hazardous Waste, specifically Subparts A through C Solid remediation waste will be generated and managed in accordance with the Colorado Solid Waste Disposal requirements 6 CCR 1007-2 In addition, sections of Part 268, Land Disposal Restrictions are applicable to off-site shipment and disposal of hazardous waste

If necessary, remediation waste will be managed in a temporary unit (TU) established pursuant to §264 553 The requirements governing TUs are applicable to tanks and containers used for storage and treatment of hazardous remediation wastes generated in conjunction with the decommissioning Incompatible wastes, if encountered, will be segregated within the units An assessment will be performed to determine the need for secondary containment Secondary containment will be provided, as appropriate, when liquid wastes are stored or treated in tanks or containers Waste characterization will be provided, as appropriate, in accordance with the substantive requirements of 6 CCR 1007 3 part 261 and 40 CFR 761 Inspection frequency and approval for the use of temporary units will be negotiated with the LRA Training for individuals generating and handling waste will be implemented using the framework identified in the RFETS Part B permit To close a TU, wastes will be removed, as appropriate When tanks are physically empty, berms providing secondary containment will be removed to facilitate equipment removal The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶17

7.3 Hazardous/Mixed Waste Treatment

Any waste, soil/waste mixture, debris, liquid or remediation wastes that are identified as a hazardous waste will be treated to meet the disposal site waste acceptance criteria If treatment is required in a Temporary Unit (TU), the LRA will be notified with respect to the location of the TU, the type of treatment process, and the duration of the treatment process

Solidification of characteristic hazardous remediation wastes may be conducted within a temporary unit For example, scabbling of low level, RCRA characteristic lead-based paint may result in a remediation waste form amenable to solidification The solidification would be conducted within competent tanks or containers and subject to waste analysis conditions imposed in the WMP For wastes that the site would put in a CAMU, treatment would be conducted to meet the CAMU waste acceptance requirements The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶17

7.4 Debris Treatment

Where appropriate, the project decontamination pad (which will be located in Building 771) or one of the site-wide Decontamination Facilities (Pad D903 located in the contractors yard) may be configured to perform low level, hazardous or mixed waste debris treatment in accordance with 40 CFR §262 34, §268 7(a)(4) and §268 45 The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶17

Solid residues from the treatment of debris containing listed hazardous wastes will be collected and managed in accordance with RCRA hazardous waste management ARARs Any solid residues from debris treatment that exhibit a hazardous waste characteristic will also be managed in accordance with RCRA hazardous waste management requirements

Liquid residues from the treatment of debris containing listed hazardous wastes are subject to RCRA hazardous waste management ARARs until they are placed into the Building 891 Wastewater Treatment

Unit Headworks Any Building residues that result from the treatment of listed debris will carry the same listing as the listed debris from which it originated Alternatively, liquid residues that meet acceptance criteria may also be treated in Building 374 or the sewage treatment plant in compliance with the RCRA and National Pollutant Discharge Elimination System (NPDES) permits

7.5 Wastewater Treatment

Remediation wastewaters generated during decommissioning may be transferred to the Consolidated Water Treatment Facility (CWTF/ Building 891) for treatment when this facility is completed Until that time one of the other alternatives will be utilized Liquid waste drained from process systems and idle equipment will not be transferred to Building 891, this RCRA waste will be transferred to Building 774, 371 or 374 for processing The CWTF will treat the remediation wastewater to meet applicable surface water quality standards under a NPDES ARARs framework Waste generated at Building 891 as a result of treatment of a listed remediation wastewater will be assigned the corresponding listed waste code All wastes generated at Building 891 will also be evaluated for hazardous characteristics The information in this paragraph is being provided to satisfy the permit waiver conditions in RFCA ¶17

Alternatively, remediation wastewater may be transferred to Building 374, to the sewage treatment plant (Building 995) if no hazardous wastes are present, or directly discharged in compliance with the administrative and substantive terms of the RFETS NPDES Permit Because these wastewater management alternatives are authorized in the NPDES Permit, no permit waiver is required

7 6 Asbestos

Compliance with asbestos requirements is an applicable ARAR and will be achieved in accordance with 5 CCR 1001-10 Regulation 8 Specifically, Section III, C 7 6, provides maximum allowable asbestos levels and section C 8 2(b), (d) and (f) provides requirements for handling asbestos waste materials In addition, the project will adhere to regulatory notification requirements for asbestos abatement mandated in Regulation 8, Part B, Section III B

Regulation 8 also governs work practices aimed at the protection of the worker/public and is virtually identical to the OSHA requirements in 29 CFR 1926 1101 At RFETS this is controlled through the Industrial Hygiene and Safety group in accordance with HSP 1-62200 HSP-9 09 NESHAP standards for asbestos will be implemented through specific operational directions in IWCPs in accordance with Regulation 8, Part B

7.7 Polychlorinated Biphenyls

Screening for PCBs will be performed on suspect materials prior to demolition The RLCR details the current areas suspected of PCB contamination (transformers and electrical components, paint, roofing materials and adhesives) For example, fluorescent light ballasts are a potential source of PCBs in the 771/774 closure project Light ballasts marked "No PCBs" or "PCB Free" will be managed as solid waste and disposed at a sanitary landfill Ballasts marked "PCBs" or not marked and not leaking will be packaged for disposal at a TSCA-permitted facility Leaking PCB light ballasts and unmarked light ballasts will be managed as fully regulated PCB articles

Any other materials identified through In-Process Characterization as suspect of containing $\geq$50 ppm PCBs, will be managed in accordance with 40 CFR Part 761, Disposal Of Polychlorinated Biphenyls Radiologically contaminated PCBs will be managed in accordance with the applicable Federal Facilities

Compliance Agreement (FFCA) until a final storage facility is approved A site procedure for PCB management is currently under development, once approved and issued for use, that procedure will be followed

7.8 Radiological Contamination

In the event that radiological contamination is identified, 10 CFR 835will be followed to ensure protection of the workers, the public, and environment In addition, DOE Order 5820 2A, "Radioactive Waste Management" has been identified as To Be Considered (TBC) and contains the requirements for the management and packaging of LLW waste

Table 7-1 Federal and State ARARs for the 771/774 Closure Project

Action	Requirement	Prerequisite	Citation	ARAR
Air Quality	Compliance with air emissions	Control of emissions for smoke, particulate, and volatiles of concern Implemented for construction activities, haul roads, haul trucks, demolition activities	5CCR 1001-3 Reg 1 5CCR 1001-9 Reg 7	Applicable
Air Quality	Compliance with NESHAP	Regulated radionuclide emissions from DOE facilities with a limit of ten mrem/yr site standard	5CCR 1001-10, Reg 8 40 CFR 61 Subpart H	Applicable
Air Quality	Compliance with NAAQS	Maintain quality of ambient air for criteria pollutants	5 CCR 1001-14	Applicable
Air Quality	Emission standards and compliance with asbestos work practice requirements	Standards for demolition, storage, and handling of waste Implemented through specific operational directions in IWCPs	5 CCR 1001-10 Reg 8	Applicable
Air Quality	Compliance with Hazardous Air Pollutant Requirements	Implemented if the remedial action involves a specific regulated pollutant, e g , lead	5 CCR 1001-10 Reg 8	Applicable
Air Quality	Compliance with ozone depleting compound requirements	Ensure refrigerants are disposed of properly Approved vessel recovery method must be used	5 CCR 1001-19 Reg 15	Applicable
Solid Waste	Solid Waste Disposal Act	Requirements for disposal of solid wastes	6 CCR 1007-2	Applicable
TSCA	Disposal of PCBs	Ensure that any materials within $\geq$ 50 ppm for PCBs are managed according to TSCA and FFCA	40 CFR Part 761 FFCA	Applicable
Hazardous Waste	Compliance with Colorado Hazardous Waste Act	Identification and characterization of hazardous waste	40 CFR 261 6CCR 1007-3, Part 261	Applicable
Generator Standards	Standards Applicable to Generators of Hazardous Waste	Generator prepares a manifest if hazardous remediation wastes are disposed of off-site	40 CFR, Part 262 6 CCR 1007-3	Applicable
TSD Facility Standards	Temporary unit container and tank storage requirements	Requirements for operation of temporary tank and container storage areas	40 CFR 264 553 6 CCR 1007-3, 264 553	Applicable
TSD Facility Standards	Container storage (Containers not in TU)	Requirements for operation of container storage area	6CCR 1007-3, Subpart I	Applicable
Closure	Closure of Permitted RCRA Units	Implemented if RCRA permitted units are closed	40 CFR Part 264 6 CCR 1007-3 Part 264	Applicable

Table 7-1 (Continued)

Action	Requirement	Prerequisite	Citation	ARAR
Closure	Requirements for Closure of RCRA Interim Status Units	Implemented if RCRA Interim Status Units are closed	40 CFR Part 265 6 CCR 1007-3 Part 265 as provided in RFCA Attachment 10	Applicable
LDR	Treatment standards for hazardous waste	Requirements for treatment and land disposal of hazardous waste	40 CFR 268 6 CCR 1007-3, Part 268	Applicable
Universal Waste Management	Requirements for Universal Waste Management	Governs batteries, pesticides and thermostats	40 CFR Part 273	Applicable
Used Oil Management	Requirements for Used Oil Management	Implemented if used oil is managed	40 CFR Part 279	Applicable
Water	NPDES Requirements for discharging water into surface water bodies	Requirements for discharge of stormwater or treated wastewater into surface water bodies	40 CFR Part 122 and 125 5 CCR 1002-8	Applicable
Radiation Protection	Standards for radiation protection	Establishes the criteria for the protection of human health and the environment	10 CFR 835	Applicable
Radioactive Waste Management	Radioactive Waste Management	Requirements for the management and packaging of LLW	DOE Order 5820 2A	TBC

C - Chemical Specific ARAR
L - Location Specific ARAR
TBC - To Be Considered

8. Environmental Consequences of the Action

Environmental effects associated with the D&D of the 771/774 Cluster are described as follows

8 1 1 Environmental Impact Issues

As described in earlier chapters, the 771/774 Closure Project is located entirely within the (secured) Protected Area of the site's Industrial Area (see Figure 2-1) Initial investigations show that many interior surfaces, process drains, piping, gloveboxes, filters, sumps and other equipment are radioactively contaminated

The proposed closure activities for the 771/774 Closure Project involve asbestos abatement, decontamination of interior surfaces and equipment by vacuuming and wiping, disconnection of electrical power, draining of piping systems and equipment, removal of gloveboxes and other equipment, further decontamination by wiping, washing, scabbling, and other methods, and dismantling and demolition of the buildings Many of these activities could qualify as categorical exclusions under DOE's NEPA regulations (e g , removal of asbestos from buildings (B1 16), demolition/disposal of buildings (B1 23), disconnection of utilities (B1 27), and minor activities to place a facility in an environmentally safe condition, no proposed uses (including reducing surface radiological contamination, but not including conditioning, treatment, or processing of spent nuclear fuel, high-level waste, or special nuclear materials) (B1 28)

Given the existing environment and industrial setting environmental impact issues associated with the 771/774 Closure Project are limited in scope The proposed activities should not result in discernible adverse effects to biological resources, including vegetation, wetlands, wildlife habitat and State and Federal sensitive (e g , threatened and endangered) species populations or habitat The buildings to be closed are not located in a floodplain and the proposed activities will not be affected by, or themselves affect, any floodplain However, due to the building's proximity to the segment of the Walnut Creek drainage located in the Protected Area, this activity may require consulting with the US Fish and Wildlife Service (USFWS) for downstream impacts to the Preble's habitat A USFWS consultation would determine mitigation measures required by to be employed as appropriate No wild and scenic rivers, prime agricultural soils, parks or conservation areas or natural resources will be affected The proposed activities will provide employment for a very small number of people, most from the current site work force, thus the activities are unlikely to result in adverse socioeconomic effects Closure is not expected to be noticeable off site and thus is not expected to result in major changes in visual quality of the RFETS community area

Therefore, this discussion of environmental impact issues focuses more intensely on the following areas of potential impacts

- Mobilization of radioactive and other contaminants into the environment via soils, air, surface waters, or groundwater,
- Health and safety of workers who may be exposed to radioactive and toxic or hazardous materials (including lead, asbestos, and PCBs), and health and safety of the public, both during normal closure activities as well as accidents,

- Environmental issues associated with waste management, including the contribution of wastes generated by the proposed activities to the decreasing site-wide capacity for interim storage and transportation of waste,
- The physical removal of Building 771 as an historic structure that is eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities at RFETS, and
- This project's contribution to site-wide cumulative impacts

8 1 2 Geology and Soils

Closure activities in the 771/774 Closure Project will disturb minor land acreage most of which has been previously disturbed Activities such as excavation could cause localized landslides or slumping to occur Some recontouring of the soils may occur after buildings are removed to restore soil in areas disturbed by demolition equipment There will be short-term increases in soil erosion and siltation and small temporary losses of soil productivity Volatile Organic Compound (VOC) and radionuclide contamination already exists in the Building 771 footprint and adjacent areas Additional contamination of soils from closure activities is not expected because building structures will be decontaminated prior to demolition of the structures themselves

8 1 3 Air Quality

Potential impacts to air quality resulting from the closure of the 771/774 Closure Project buildings include asbestos emissions resulting from asbestos removal, Beryllium emissions resulting from the decontamination and removal of equipment and building materials, radionuclide emissions resulting from the decontamination and removal of equipment, hazardous air pollutant from removal of chemical systems and fugitive dust emissions resulting from transportation activities associated with the closure and demolition activities Air emissions from these activities will be controlled and monitored in accordance with the Site Health and Safety Program

Asbestos is present in several areas, primarily in the form of pipe insulation These materials will be removed by a properly certified contractor in accordance with applicable State and Federal regulations Assuming that the removal, transportation, and final disposition are in accordance with applicable regulations, there is minimal risk of an asbestos release to the air

Some equipment within Building 771 is potentially contaminated with beryllium The housekeeping action level for beryllium contamination is 25 $\mu g/ft^2$ Cleanup and removal of materials and equipment contaminated with beryllium has a very small potential to cause a release to the air Management of the contaminated materials and equipment in accordance with current site procedures will result in minimal risk to both on- and off-site personnel

Decontamination, size reduction, removal and ultimate disposal of equipment and materials in Building 771 have the potential to release radionuclides to the air Decontamination and size reduction activities take place within containment (either glovebox, B box or hood) that is equipped with a HEPA filter In addition the building room exhaust is equipped with HEPA filters This essentially eliminates the potential for a radionuclide release short of an accident during the transportation of the contaminated material Stack monitoring is also conducted to ensure the integrity of the HEPA filtration equipment

Decontamination, size reduction, removal and ultimate disposal of equipment and materials in Building 771 also have the potential to release chemicals to the air Mitigative actions may be taken to reduce the resulting emissions as appropriate

Fugitive dust emissions will result from the transportation of materials and wastes from the 771/774 Closure Project There will be significant, short-term fugitive dust emissions during the demolition of the structure itself without taking mitigation measures Building 771 is a reinforced concrete and cinder block construction that will require the use of heavy equipment to reduce Because of the distance of the Cluster from site boundaries impacts will be short-term to personnel working in areas approximate to the 771/774 Closure Project

Miscellaneous chemicals and other hazardous materials will be removed from several structures within the 771/774 Closure Project These materials will be managed in accordance with existing site procedures and there will be little risk for air emissions

8 1 4 Water Quality

Because the scope of work authorized by this DOP does not include the demolition of Building 771 and 774, and since no other structures of the 771/774 Closure Project will be removed below ground level completion of the 771/774 Closure Project is not expected to change storm water runoff, storm water percolation or surface water flow characteristics (Changes resulting from remediation activities outside this project will be dealt with in their documentation)

Because 771/774 Closure Project will remove portions of ancillary structures (trailers) off ground level, some new bare ground is expected to be exposed to wind or water erosion If appropriate in specific instances silt fencing or similar protective device would be installed to prevent or minimize the possibility of water-borne soil leaving the immediate area and entering drainage ways Demolition activities may, however, deposit small debris on the surrounding pavement or ground surface that could be carried away by storm water runoff Quantities of such material are expected to be small

Among the techniques under consideration for decontamination of the 771/774 Closure Project are the use of water or steam to remove radiological contamination and loose debris While this technique is effective in removing radiological contamination, it also generates large volumes of potentially contaminated water and may even contribute to the spread of radiological contamination Surface water samples from the 771/774 Closure Project drainage sub-basin will be collected using an automated station located to pull samples from the entire sub-basin's runoff Water used for decontamination will be treated prior to release

Because no work will be done below ground level ground water should not be affected

8 1 5 Human Health Impacts

Closure has the potential to expose involved workers, non-involved workers and expose the public to radiological and other chemical contamination because the nature of the work is to remove or fix-in-place contamination Disruption of contaminants or hazardous materials increases the chance of the contaminant or materials being dislodged, becoming airborne, and being inhaled by or deposited on humans

8 1 6 Radiological Impacts

For involved workers, closure activities at Building 771 are estimated to result in an average yearly dose of 100-200 mrem to each worker involved in closure of the Building Cluster Annual exposures are expected to decline over the life of the project, as higher risk activities are addressed early on in the process This exposure would be expected to result in less than 1 (0 07) latent cancer fatalities, assuming the same worker group conducted both deactivation and decontamination activities Doses to co-located workers from closure operations at Building 771 alone have not been evaluated However, the annual radiological exposure of a maximally exposed co-located (unprotected) worker as a result of site-wide closure activities is estimated at 5 4 mrem (a mrem is 1/1000 of a rem) The corresponding risk of a latent cancer fatality to this worker is two in 1,000,000 (Cumulative Impact Document (CID), Section 5 8 1)

Annual dose to the maximally exposed off site individual from site closure activities is estimated at 0 23 mrem, with a corresponding excess latent cancer fatality of 1 in 10,000,000 The annual dose to the public as a result of all activities in the RFETS closure project at the peak time of exposure (1997 - 2006) is expected to be a total of 23 rem for all of the 2 7 million people projected to be living within 50 miles of the site in 2006 This annual dose of 23 person-rem would be expected to result in less than one (0 01) latent cancer fatality in the entire Denver area population Estimated annual dose to the maximally exposed off-site individual is well below the applicable standard of 10 mrem/year (CID, Section 5 8 2)

Estimated doses from the 771/774 Closure Project are expected to be a small fraction of those estimates for site-wide activities as described above For comparison purposes, DOE's annual limit for occupational exposure as a result of all activities and through all exposure pathways is 5,000 mrem (5 rem) per person Natural background radiation in the Denver area results in an annual exposure of approximately 350 mrem per person

Exposures to workers and the public will be controlled and monitored in accordance with the RFETS radiation safety program

8 1 7 Non-Radiological Impacts

Non-radiological health effects (from exposure to chemicals) are measured by a hazard index A hazard index greater than one is considered to be a basis for concern, and the greater the index is above one, the greater the level of concern

For the full suite of site closure activities (including closure of all buildings), a hazard index of 1 2 has been calculated for a co-located worker who is chronically exposed during working hours to all chemicals of concern simultaneously (as described in the CID) over the entire period of site closure The corresponding cancer risk is 5 in 100,000 (CID Section 5 8 3)

For the full suite of site closure activities (including closure of all buildings), a hazard index of 1 5 has been calculated for a member of the public who is chronically exposed every day for 70 years to all chemicals of concern (as described in the CID) simultaneously (a highly unlikely event) A more reasonable scenario of exposure to a single chemical showed hazard indices of well below one for each potentially released chemical, analysis of potentially carcinogenic air pollutants indicates a cancer risk of 3 in 10,000,000 for the maximally exposed off site individual (CID Section 5 8 4)

Estimated non-radiological impacts from the 771/774 Closure Project are expected to be a fraction of those estimated for site-wide activities, as described above Exposures to workers and the public will be

controlled and monitored in accordance with the RFETS toxic/hazardous materials and chemical safety program

8 1 8 Occupational Hazards

In addition to exposure to radiological and chemical hazards, workers at the site are exposed to a variety of industrial hazards such as heavy machinery, repetitive motion tasks, and physical agents such as heat and cold Using a general industry rate for construction to estimate injury and illness cases, site closure activities are estimated to result in 584 cases of injury and illness during the peak activity period (1997 - 2006) (CID, Section 5 8 3) The portion of these cases that would be estimated to result from the Building 771 closure alone would be less than the total site figure

The general industry rate of injury and illness is considerably higher than the historic incidence rate for the site, occupational hazards will be controlled, mitigated and monitored in accordance with the RFETS occupational health and industrial safety programs

8 1 9 Plants and Animals

Because the 771/774 Closure Project is located in the previously disturbed Industrial Area, impacts to plants and animals are expected to be minimal Possible minor impacts to other vegetative areas may result as fugitive dust may distribute undesirable materials among existing plant species Additional impacts may occur to vegetation associated with increased traffic in order to accommodate the closure equipment Increased traffic, both vehicular and pedestrian, could result in some vegetation disturbance

Some of these mammals such as rats, mice and raccoons are known to be residents of or visitors to the Industrial Area These mammals would be displaced and some mortality would occur as a result of closure activities Bird nests attached to buildings planned for demolition would be destroyed, although no direct bird mortality is anticipated

8 1 10 Waste Management

Environmental impact issues associated with waste management are related to human health issues, storage capacities, and transportation In general, waste generated from the 771/774 Closure Project includes contaminated and uncontaminated equipment, tools, electrical conduit systems, piping systems, gloveboxes and facility structural materials

Closure activities will be performed to remove radiological contamination and hazardous constituents Items that have been decontaminated to a free release condition will be transferred for use at a different location within RFETS, for use at a different a DOE facility, or sent to the PU&D organization for appropriate handling Mixed waste generated from closure activities will be stored in permitted areas on-site, or where feasible, shipped to an approved off-site disposal site On-site storage of mixed waste will be in accordance with approved site procedures until the material can be shipped for final disposal Hazardous materials and excess chemicals will be managed as waste, where applicable and disposed of in accordance with established procedures Materials and waste will be characterized, stored and disposed of in accordance with the requirements of approved site waste management procedures that meets state and Federal regulations

Waste minimization will be utilized in the planning and management of the 771/774 Closure Project closure wastes Elimination and reduction of waste generated as a result of closure is a high priority Standard decontamination operations and processes will be evaluated for waste minimization potential and suitable minimization techniques will be implemented

With respect to transportation concerns, the 771/774 Closure Project closure project would generate and package materials suitable to meet DOT transportation requirements

8 1 11 Historic Resources

The environmental impact issue related to historical resources is the loss of Building 771 as a historic structure eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities A related cumulative impact is discussed in a subsequent section

Sixty-four buildings within the site's Industrial Area, including Building 771, have been identified as important to the historic role of the site in manufacturing nuclear weapons components during the Cold War Building 771 was originally constructed in 1951, with a number of additions between 1962 and 1974 While this building like the others is less than 50 years old, it is considered historically significant as an essential component of the weapons production activities at RFETS

Negotiations have been completed between DOE and the State Historic Preservation Officer (SHPO) concerning the appropriate mitigative measures applicable to these buildings, Building 771 will be subject only to documentation requirements (collection or creation of construction drawings and photographs), rather than preservation No modification of or damage to the building will occur prior to completion of such an agreement and completion of documentation according to standards accepted by the SHPO

8 1 12 Noise

Closure and demolition of the 771/774 Closure Project are not expected to significantly increase noise levels in the Rocky Flats area Most activities will take place inside the associated building so noise levels, if elevated over ambient levels, will be confined to the 771/774 Closure Project structures in which they are generated Other less common activities such as scabbling (use of a machine to remove layers of concrete), blasting (use of various materials such as sand, dry ices, or other abrasives to remove surface radiological contamination), and demolition by backhoe ram, hydraulic cutters, or other devices are expected to generate noise levels higher than ambient noise levels However, workers involved in those activities will use appropriate hearing protection devices during activities expected to generate high noise levels Outdoor activities will take place at a distance from unprotected workers and the public and thus are not expected to increase noise levels to these populations to an unsafe level

8 1 13 Socioeconomic Effects

Potential impacts from the 771/774 Closure Project would contribute to a net overall loss of employment in the long run The current on-site work force in the building would either be drawn into the closure activities for the building (and potentially for the entire site) or voluntarily lose employment In the short run, the closure activities could actually increase the employment level due to increased work force levels associated with closure activities Additionally a modest increase of purchases (raw materials, etc) may result due to closure activities in the short run

Under the worse case scenario, if the entire work force currently housed in the 771/774 Closure Project all opted for voluntarily unemployment, the net overall impact would not have a great adverse effect on the Denver Metropolitan area nor would it adversely effect Boulder or Jefferson Counties, where the majority of the work force reside Taken as a single building, the net effects are expected to be minimal

8 1 14 Cumulative Effects

Impacts associated with the 771/774 Closure Project would contribute incrementally to potential site-wide cumulative impacts associated with the overall site closure program

Some of these cumulative impacts may ultimately prove to be beneficial to the environment, assuming that the activities result, as expected, in the restoration of much of the site's original, natural condition prior to construction (Remediation is currently scheduled to follow building demolition) Removing human occupation, structures, and paved surfaces and reestablishing native grasses and other vegetation could restore native plant communities and increase wildlife habitat, including threatened and endangered species Cleaning up contamination will reduce health risks to human and animal populations

For other cumulative impacts, including the final remediation phase that will be conducted outside of this project further study may be warranted As with the 771/774 Closure Project, decontamination and closure of structures site-wide will generate transuranic, low-level, low-level mixed waste, and industrial (landfill) waste Existing on-site interim storage for radioactive waste is limited (DOE/EA-1146), and eventually, as site-wide closure progresses, additional storage capacity may be needed The same is true for industrial waste

Also, demolition of the 771/774 Closure Project is part of a potential cumulative effect to historic resources Demolition will result in the physical removal of a historic structure that is eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities Other historic structures within this district are also proposed for closure and presumed demolition The cumulative effect of these removals may be significant (see mitigation measures below) Also, the collective effect of removing most or all of the structures would be visually dramatic High profile structures that have dominated the site and the local skyline for 45 years would be eliminated The landscape would take on a less industrial and more open, rural appearance, similar to the rangeland that characterized the area before the plant was constructed

8 1.15 Mitigation Measures

Mitigation measures are prescribed to reduce or avoid potentially adverse effects associated with a proposed activity For the decontamination and closure of the 771/774 Closure Project, mitigation measures will be considered in the areas of human health, worker safety, release of emissions and mobilization of contaminants and cultural resources

Closure will be conducted in accordance with applicable worker and public health and safety programs and activities will be managed so that emissions and discharges are within applicable regulatory limits As required, closure will take place within containment of existing buildings or temporarily constructed facilities (e g , tents) with functioning drainage, air filtration and other safety and environmental protection systems commensurate with risks inherent in the activities being conducted

Precautions will be taken to ensure compliance with the Migratory Bird Act that prohibits destruction of birds or their nests, active or inactive without a permit Building surveys for such nests in the 771/774 Closure Project will be conducted prior to demolition

No closure activities will take place in or near habitat of known threatened or endangered species

No modification or damage to buildings determined to be eligible for the National Register of Historic Places will occur prior to completion of the documentation requirements in accordance with the standards set forth in the Memorandum of Agreement with the SHPO

8 1 16 Unavoidable Adverse Effects

The 771/774 Closure Project closure activities if conducted as proposed will have the following unavoidable adverse effects

- Physical removal of an historic structure that is eligible for the National Register of Historic Places and a secondary contributor to a potential Historic District comprised of Cold War Era facilities,
- Short-term increases in air emissions and water discharges,
- Radiation and chemical exposures to workers, co-located workers, and the public, resulting in a small, but increased risk of adverse health effects,
- Possible industrial accidents, resulting in injury and illness, and
- Increased noise levels for the duration of closure activities

8 1 17 Short-Term Uses and Long-Term Productivity

Unlike most projects that commit a Site to a particular use for a period of time, the effect of closure will be to undo past commitments concerning use of the Site and open up a new and broad range of potential future uses Closure does not commit the Site to a particular land use rather, closure of the 771/774 Closure Project will be one step in the process of ending one use and opening consideration for a variety of other possible future short- and long-term uses

8 1 18 Irreversible and Irretrievable Commitments of Resources

Closure is essentially a destruction project eliminating existing uses not a construction project consuming land and building materials The completion of the 771/774 Closure Project will release land and perhaps some buildings for other uses Funds, labor, equipment, fuel, tools, personal protective equipment, waste storage drums and similar items are resources that will be irretrievably committed to the Closure Project

8.2 Overall Cumulative Impacts Analysis for RFETS Site Closure

The following is a summary of insights gained from the CID impacts analysis and risk assessments relative to human health, safety and the environment

- Both the radiological and non-radiological risks to the workers, co-located workers and public as a result of normal operations are lower than during the weapons production years

- Radiological and non-radiological risk to the workers, co-located workers and public as a result of normal operations is minimal and well below the Clean Air Act and EPA standards
- Radiological risk to the workers, co-located workers and public as a result of normal operations is dominated by SNM activities, residue stabilization and individual facility disposition of the plutonium facilities Once these activities are completed, doses and excess latent cancer fatalities to the workers, co-located workers and public become insignificant
- For the baseline case, radiological accident risks dominate the overall risks to the workers, co-located workers and public However, of the closure case, risks to the workers, co-located workers and public are initially dominated by radiological accident risks, until around 2006, when residue stabilization, SNM consolidation activities and initial deactivation efforts that remove or fixate holdup are completed Then the risks are dominated by normal operations involving the individual facility disposition process and environmental restoration as the plutonium buildings' nuclear ventilation systems go through the individual facility disposition process
- Probability of a seismic event contributes over 90% of the risk to the co-located worker, maximally exposed off-site individual and 50 mile population for both overall baseline case accident risks and to the overall closure case accident risk during the peak year

The following closure operations and activities contribute the most to reducing the risk of accidents caused by seismic events and thereby overall accident risk to the workers, co-located workers, and public in the following order of priority based on the projected schedules

- consolidating plutonium oxides into building 371,
- repackaging the dispersible residues into the pipe/drum component or storing in building 371,
- removing plutonium hold-up,
- shipping TRU/TRM waste drums to WIPP,
- transferring SNM from building 371 to the ISV or shipping off-site,
- shipping other TRU/TRM waste to WIPP and shipping LL/LLM waste off-site

The CID provides a comparative summary of the two cases in terms of the expected environmental impacts The following are some insights gained from the ecological risk assessments and impacts analysis relative to the environment

Short-term impacts on wetlands, sensitive habitats, wildlife and species of special concern may occur as a result of extensive site closure activities There is however, no natural resource injury expected Closure activities are not expected to result in the irretrievable or irreversible commitment of any natural resources of the site Closure activities will be evaluated in light of the potential for natural resource injury and applicable mitigation measures will be taken to minimize the potential for natural resource injury to the extent practicable

The closure case anticipates use of a flow-through water management system for on-site water management ponds and then the eventual conversion of the ponds to wetlands This action may initially reduce the open-water habitat on the site created by the water management ponds, but as the ponds are converted to wetlands, wetland species diversity would increase and overall biodiversity at the site would

be improved over the long term All other on-site environmental impacts are considered low for both cases and no natural resource injury is expected

Cumulative impacts are impacts on the environment resulting from the incremental impacts of an action when added to other past, present and reasonably foreseeable future actions carried out both by the federal agency and other entities within the geographical region Significant impacts could result from several smaller actions that, by themselves, may not have significant impacts Cumulative impacts associated with either case and any potential developments in the region of the site would include

- Increased surface runoff and decreased groundwater discharge because of the use of on-site landfill or Corrective Action Management Unit (CAMU) caps
- Short term impacts to wetlands habitat, riparian habitat, and open water habitat, aquatic habitat, native grasslands communities and species of special concern However, once the water management ponds are converted to wetlands, biodiversity is expected to increase
- Minor cumulative impacts to surrounding land uses primarily along state routes and local roadways
- Increased traffic volume resulting from off-site shipments of Pu Pits and wastes potentially causing congestion problems
- Increased traffic accidents resulting in fatalities and potential latent cancer illnesses related to motor vehicle emissions, fugitive dusts and brake/tire wear
- Socioeconomic impacts from reductions in the site's workforce will not substantially affect surrounding region due to additional growth projected in the area

Overall, substantial cumulative impacts are not anticipated from the closure of Building 771

9. Quality Assurance Strategy

9.1 Background

The work to be performed under this Plan must be accomplished in accordance with regulatory and contractual Quality Assurance requirements that are common to nuclear facilities across the DOE complex The regulatory document is 10 CFR 830 120, *Quality Assurance Requirements* (the Price-Anderson QA rule) The contractual document is DOE Order 5700 6C, *Quality Assurance*

10. Project Organization

The following section is provided for information purposes only The site can change this information as necessary to support the goals of the project without regulatory approvals

10.1.1 Organization / Resources

The team may consist of personnel from a number of the K-H team subcontractors, although primarily from Safe Sites of Colorado (SSOC) and Rocky Mountain Remediation Services (RMRS) A teaming agreement is underway in Building 779 with SSOC, RMRS and K-H to facilitate a seamless evolution through the various stages of the closure project Developed as part of the major reengineering project on site, this arrangement will maximize the core competencies of the major subcontractors, maximize the efficiency of the available work force and improve safety of the workers This teaming agreement may be utilized in Building 771/774 Closure Project

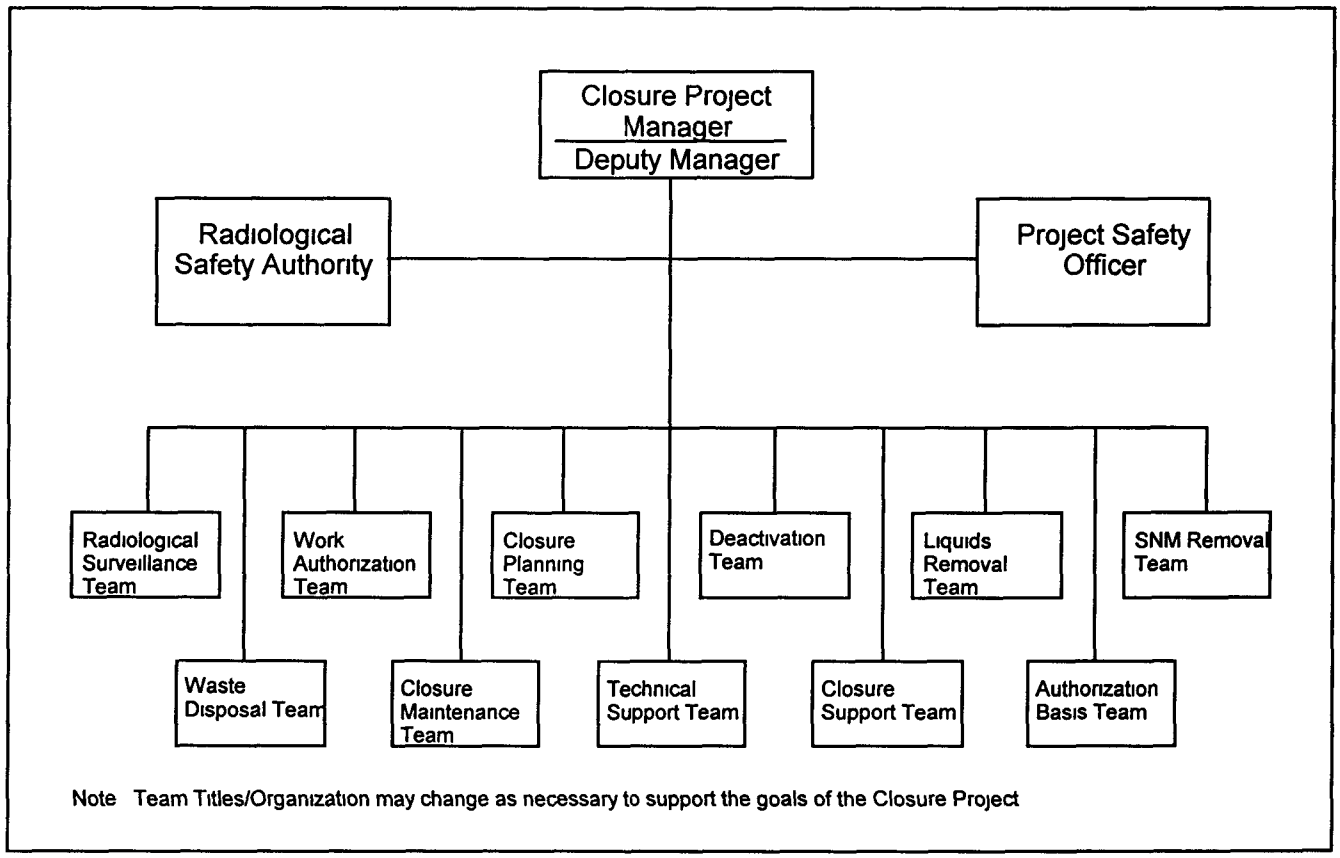

Figure 10-1 Organization Structure

The detailed roles and responsibilities of the positions are included at the end of this section, but in brief, there is a clear line of responsibility from the integrator to the closure project manager, through the work release manager, to the execution project managers and finally to the enhanced worker teams

- The Closure Project Manager is the senior leader of the closure project and has the responsibility to set expectations for performance, establish principles of behavior and provide the primary senior external interface for the closure project
- The Work Authorization Team Leader is the focal point who maintains the safety and regulatory envelope for the project This person provides the primary external interface to the site-level safety and regulatory direction and is the link to the conduct of operations improvement It provides the project constraints to the Project Execution Managers and then gives the day to day authorization to proceed with work similar to the function currently provided by a shift manager
- The Closure Planning Team Leader is the primary interface to external organizations that are working on other site closure projects Within the closure project this person has the responsibility to maintain the project closure plan and to coordinate the distributed planning resources that are under the direct wing of the Project Execution Managers The plan includes the entire closure project, the three-year plan, as well as the annual, monthly, and weekly plans The resource needs must be projected to allow adequate time for the Technical Support Manager to acquire the resources for distribution to the Project Team Leaders
- The Project Team Leaders are an extremely important function It is "where the rubber meets the road" on executing the defined project work scope The work scope definition comes from the Closure Planning Team For example, a Project Team Leader would be assigned to glovebox removal or to excess equipment removal
- The Technical Support Manager is responsible for filling a number of resource needs of the Project Team Leaders as predicted by the Closure Planning Team Leader These resources include all technical aspects including Nuclear Safety, Criticality Safety, Environmental Safety, Engineering, etc This person is the focal point for setting resource priorities The Closure Project Manager sets the absolute Priorities
- The Enhanced Worker Teams are teams that have the self-contained resources to complete the assigned project activity Some resources would be temporarily assigned to the activity, however, it is the responsibility of the Technical Support Manager to assure that the necessary external resources are provided at precisely the right time There will be several modes of self-direction depending upon the team experience This includes self-identification of hazards in the spirit of 95-2 Specific resources required are detailed as part of the resource-loaded schedule

Appendix 1 References

"Building 771 Walkdown Report", Draft, Rev 1 3, 8/29/96

BDP-771-001, "Building 771 Cluster Initial Project Scope,", Revision 0, July 24, 1996

Combining Integrated H&S Strategy with Enhanced Work Planning An implementation approach for PUREX facility, 10/29/96

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DOE/EM-0318, Facility Deactivation Guide, 12/01/96

Final Rocky Flats Cleanup Agreement, 7/19/96

Health and Safety Practices Manual

Integrated Work Control Program Manual

Management Plan for Material Contained in Idle Equipment

MOU Governing Regulation and Oversight of DOE Activities in the RFETS Industrial Area, 2/15/96

RCRA Closure Plan for Mixed Residue Container Storage Units

SSOC Quality Assurance Program

SSOC Quality Assurance Program Plan

Waste Stream and Residue Identification and Characterization, Building 771

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"EG&G Rocky Flats Duct Holdup Measurement Program Major Observations and Recommendations of the Peer Review," Los Alamos National Laboratory, LA-UR-91-2104 (June 1991), Appendix G A Sheppard, N Ensslin, R Picard, and J Malanify, "Technical Peer Review of Rocky Flats Duct Holdup Measurement Program," Los Alamos National Laboratory, N-1-91-580, (May, 1991)

Ensslin and H A Smith, Jr , "Attributes and Semi-quantitative Measurements," Chapter 20 in Passive Nondestructive Assay of Nuclear Materials, NUREG/CR-5550, T D Reilly, N Ensslin, and H A Smith, Jr , Eds , Los Alamos National Laboratory document LA-UR-90-732 (1991)

"Quantification of Holdup," Rocky Flats Environmental Technology Site, 4-X60-SMP-3001, Written February 18, 1997

Safeguards and Security Definitions Guide, U S Department of Energy, Office of Safeguards and Security Affairs, December 20, 1993

Site Holdup Measurement Plan, 4-81232-97-Plan-Holdup-001, Revision 1,

Appendix 2 Definitions/Acronyms

DEFINITIONS

Closure Takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement These actions are taken at the end of the life of the facility to retire it from service with adequate regard for the health and safety of workers and the public and protection of the environment For those buildings in which no deactivation occurs, the term includes characterization as well as the above activities The ultimate goal of closure is unrestricted release, or if unrestricted use is not feasible, restricted use of the site

Cluster A group of buildings, facilities and equipment that make up a project for a defined task such as closure or deactivation

Deactivation The process of placing a facility in a safe and stable condition to minimize the long-term cost of a surveillance and maintenance program that is protective of workers, the public, and the environment until closure is complete Actions include the removal of fuel, draining and/or de-energizing of non-essential systems, removal of stored radioactive and hazardous materials and related actions As the bridge between operations and closure, based upon facility-specific considerations and final disposition plans, deactivation can accomplish operations-like activities such as final process runs, and also decontamination activities aimed at placing the facility in a safe and stable condition Deactivation does not include decontamination necessary for the dismantlement and demolition phase of closure, i e , removal of radiological contamination remaining in fixed structures and equipment after deactivation Deactivation does not include removal of contaminated systems, system components, or equipment except for the purpose of accountability of SNM and nuclear safety It also does not include removal of radiological contamination except as incidental to other deactivation or for the purposes of accountability of SNM and nuclear safety

Decommissioning For those buildings, portions of buildings, structures, systems or components (building) in which deactivation occurs, all activities that occur after the deactivation It includes surveillance, maintenance, decontamination and/or dismantlement for the purpose of retiring the building from service with adequate regard for the health and safety of workers and the public and protection of the environment The ultimate goal of decommissioning is unrestricted use or, if unrestricted use is not feasible, restricted use of the buildings

Decontamination The removal or reduction of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning or other techniques to achieve a stated objective or end condition

Dismantlement The disassembly or demolition and removal of any structure, system, or component during closure and satisfactory interim or long-term disposal of the residue from all or portions of the facility

End-Point Criteria The defined objective(s) or goal(s) that represent the agreed upon facility condition to be achieved during the closure process

Enhanced Work Planning (EWP) EWP is a process that evaluates and improves the program by which work is identified, planned, approved, scheduled, coordinated, controlled, and executed

Facilities Buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein, outside plant, including site development features such as landscaping, roads, walks, and parking areas, outside lighting and communication systems, central utility plants, utilities supply and distribution systems, and other physical plant features

Graded Approach A process that assures safety analysis and documentation preparation is commensurate with the magnitude of the hazards being addressed and the complexity of the facility and/or systems being relied on to maintain an acceptable level of risk

Hazard A source of danger (i e , material, energy source, or operation) with the potential to cause illness, injury, or death to personnel, or damage to a facility or the environment without regard for the likelihood or credibility of accident scenarios or consequence mitigation

Job Hazard Analysis An analysis of procedurally controlled activities that uses developed procedures as a guide to address and consider the hazards due to any exposures present during implementation of (job) procedures, the use and possible misuse of tools and other support equipment required by the procedures and the behavioral motivations of the people performing them A type of hazard analysis process which breaks down a job or task into component steps, examines each step to determine what hazard(s) exist or might occur and establishes actions to eliminate or control the hazard

Operationally Empty (as defined in the Mixed Residue Tank System Management Plan - Update July 31, 1997) The condition of the tank following removal of as much material as possible using ancillary equipment Operationally empty tanks may contain varying amounts of material depending upon design

Physically Empty (as defined in the Mixed Residue Tank Systems Management Plan - Update July 31, 1997) The condition of a tank or ancillary equipment in which no liquid remains after verification from personnel familiar with the tank system or a proven technology For example, verification can be done by draining at low points or by non-destructive testing

RCRA Stable Tanks and ancillary equipment emptied to the maximum extent possible using readily available means with objective achievement of less that 1% by volume of holdup in tanks and ancillary equipment No significant amount of sludge and no significant risk with remaining residues

_Safety and Health As defined in this report, a conditional state in which both the public and workers are free from harm It is also defined as the practice and application of techniques to help prevent illness, injury, death and property loss as a result of unintentional and undesirable conditions and acts

Safety Authorization Basis The combination of information relating to the control of hazards at a facility (including design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that activities at the facility can be conducted safely

Safety-Critical Items Equipment, systems, or components that are necessary to prevent or mitigate the harmful consequences of hazardous materials release

Set A discrete piece of work scope, such as an equipment group, single piece of equipment or geographical area that is ranked and prioritized for the 771/774 closure project

Standards As defined by the Department's Standards Committee, standards include "Federal, state, and local laws and regulations, Department Orders, nationally and internationally recognized standards, and other documents (such as industrial standards) that protect the environment and the safety and health of our workers and the public "

Surveillance and Maintenance (S&M) A program established during deactivation and continuing until phased out during closure to provide containment of contamination, physical safety and security controls and maintenance of the facility in a cost-effective manner that is protective of workers, the public and the environment

Work Sets Discrete units of work arranged by system or area with specific endpoints assigned

Work Task A discrete activity made up of procedures performed in steps to achieve an objective goal such as removal of plutonium from gloveboxes, removal of a chemical from a storage area or removal of asbestos from a facility area

ACRONYMS

ACM	Asbestos Containing Material
AEA	Atomic Energy Act
ALARA	As Low As Reasonably Achievable
APEN	Air Pollutant Notice
AQM	Air Quality Management
Ar	Argon
ARF	Administrative Record File
ARARS	Applicable or Relevant and Appropriate Regulations
cc	cubic centimeter
CAM	Continuous Air Monitor
CAMU	Corrective Action Management Unit
CDD	Closure Description Documents
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CID	Cumulative Impact Document
CFR	Code of Federal Regulations
CHWA	Colorado Hazardous Waste Act
CWTF	Consolidate Waste Treatment Facility
D&D	Decontamination and Decommissioning
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DOP	Decommissioning Operations Plan
DPMP	Decontamination Program management Plan
DPP	Decommissioning Program Plan
DQO	Data Quality Objectives
EDE	Effective Dose Equivalent
EPA	Environmental Protection Agency
EWP	Enhanced Work Planning
F	Fluorine
FFCA	Federal Facilities Compliance Agreement

GB	Glovebox
HASP	Health & Safety Plan
HF	Hydrofluoric Acid
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation and Air Conditioning
IHSS	Industrial Hazardous Substance Site
IMC	Integrated Management Contractor
ISM	Integrated Safety Management
IWCP	Integrated Work Control Package
JHA	Job Hazard Analysis
KOH	Potassium Hydroxide
LDR	Land Disposal Restricted
LLW	Low-Level Waste
LLM	Low-Level Mixed Waste
LRA	Lead Regulatory Agency
m	meter
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
mg	milligram
mm	millimeter
MW	Mixed Waste
nCi	nanocuries
N_2	Nitrogen
NaOH	Sodium Hydroxide
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
O_2	Oxygen
OSHA	Occupational Safety & Health Administration
PCB	Polychlorinated Biphenyls

PPE	Personal Protective Equipment
PU&D	Property Utilization & Disposal
PUREX	Plutonium-Uranium Extraction Facility at Hanford
Pu	Plutonium
QA	Quality Assurance
RAAMP	Radioactive Ambient Air Monitoring Program
RCM	Radiological Control Manual
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLCR	Reconnaissance Level Characterization Report
RMRS	Rocky Mountain Remediation Services, L L C
RSP	Radiological Safety Procedures
RWP	Radiological Work Permit
S&M	Surveillance and Maintenance
SHPO	State Historic Preservation Officer
Site	Rocky Flats Environmental Technology Site
SNM	Special Nuclear Material
SSOC	Safe Sites of Colorado, L L C
TBC	To be considered
TRM	Transuranic Mixed Waste
TRU	Transuranic
TSCA	Toxic Substances Control Act
TSD	Temporary Storage and Disposal
TU	Temporary Unit
UPS	Uninterruptible Power Supply
USFWS	US Fish and Wildlife Service
VOC	Volatile Organic Compound
WA	Work Authorization
WAC	Waste Acceptance Criteria

WIPP	Waste Isolation Pilot Plan
WMP	Waste Management Plan
WSRIC	Waste Stream and Residue Identification and Characterization

Appendix 3 Equipment Selection Criteria

Group A Physical Constraints

- Dedicated work space and accessibility
- Work space does not conflict with other operational activities
- Activities cannot disable needed utility and support systems
- Consideration should be given, for diversity sake, to deal with a variety of equipment/systems for future groups

Group B Workforce

- Workforce is trained and experienced to carry out the activities
- Organize activities to increase efficiency (production team) – consider similar type activities at same time
- ALARA must be considered, dose reduction achieved by equipment removal-balanced by available dose budget

Group C Operational / Technical Issues

- Consider removal of cold process systems with high potential for cross contamination
- Pick activities to accomplish major hazard reduction while ensuring a sufficient number of necessary "practice" activities
- Ensure closure and spare equipment available for activities chosen
- Consider life expectancy/recent failures

Group D Management

- Choose activities with regulatory path forward (authorization basis, criticality evaluations, permits, etc)
- Consider activities that yield early successes and easy to measure metrics

Group E Cost

- Excess materials (recycle) when there is an identified need
- Choose equipment/systems to eliminate high S&M costs

Group F Waste

- Little effort required to meet waste disposal criteria (WIPP, NTS, Envirocare/ Site/etc)
- Few different waste types involved with the activity
- Available, easy to accomplish size reduction and decontamination technologies need, location, costs

Appendix 4 771/774 Closure Project Equipment Sets by Priority

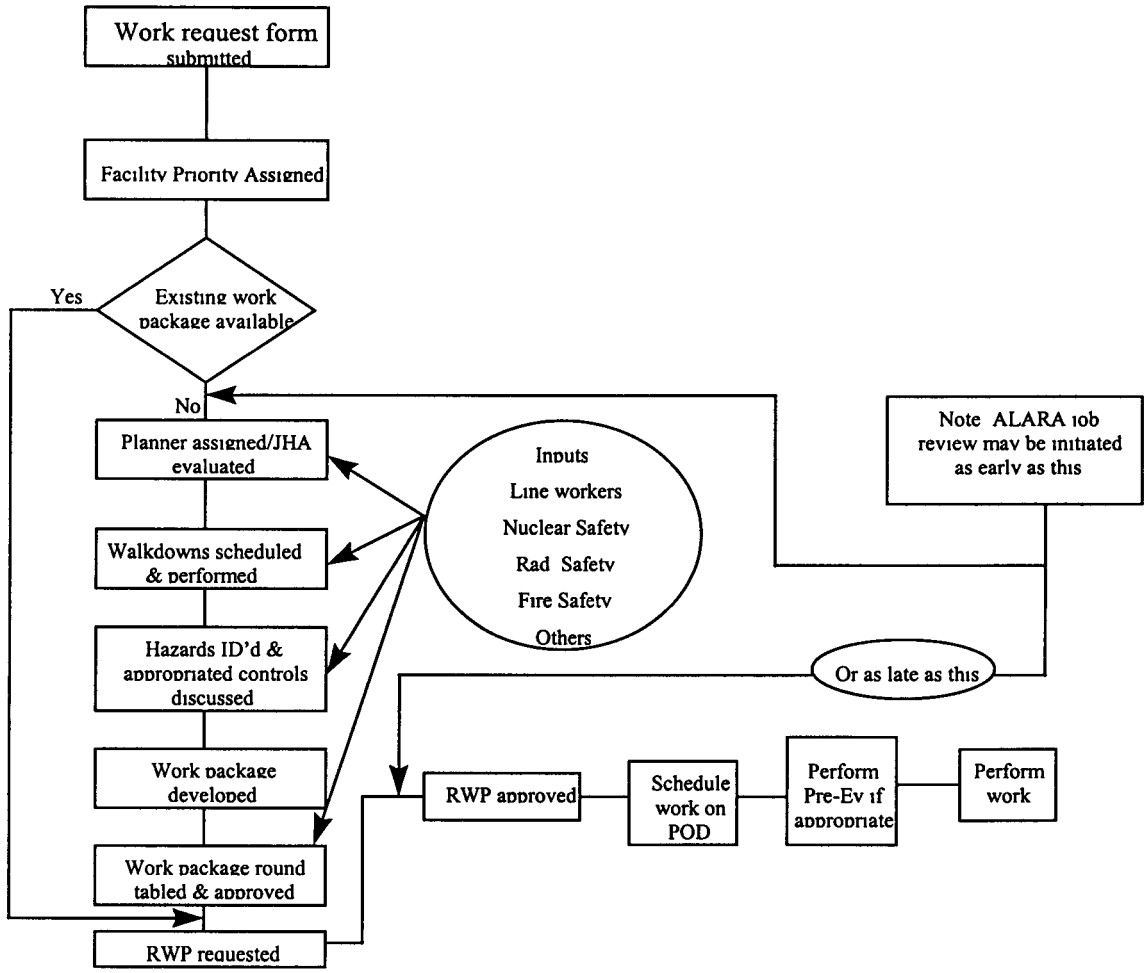
Priority	Set #	Set Description
1	37	Rm 181A Boxes, Vessels, & Piping
2	40	Rm 183 Storage Area
3	32	Rm 149 Unused Glovebox #30, vessels & piping
4	34	Rm 148 Process Area
5	44	Rm 179 Maintenance Area
6	38	Rm 182 Gloveboxes
7	45	Rm 174 Process Area
8	43	Rm 180A-F &K Process Area
9	42	Rm 180 Office Area
10	41	Rm 186 Process Area
11	36	Rm 146 Process Area
12	17	Rm 114 Process Room, GB#17
13	50	Rm 158 Lab Analysis
14	49	Rm 157 Stock Room Area
15	10	Rm 114 GB#5
16	3	Locker Room Area
17	35	Rm 147 Office Area
18	7	Rm 114 GB#2
19	14	Rm 114 GB #14
20	22	Rm 149 Incinerator GB #33,37,38,39
21	1	Corridor B Office Area
22	15	Rm 114 GB#13, Old #14
23	48	Rm 153 Process Area
24	27	Rm 149 Process Area old GB#30
25	8	Rm 114 GB #3
26	30	Rm 149 Process Area GB# 42

27	26	Rm 149 Process Area GB# 29
28	24	Rm 149 Process Area GB# 26
29	25	Rm 149 Process Area GB# 27 (Cold)
30	6	Rm 114 GB# 1
31	33	Rm 149 Process Area Tank Farm
32	9	Rm 114 GB# 4, 5A, 9A, 22
33	59	Indirect/Direct Evaporative Cooling Area
34	29	Rm 149 Process Area GB# 40, 44
35	2	Corridor F Office Area
36	39	Rm 182A gloveboxes
37	51	Rm 149 Utility Support Area
38	13	Rm 114 GB# 11, new 14
39	12	Rm 114 GB# 8, 8E, 9
40	16	Rm 114 GB# 15, 16
41	46	Rm 164 Lab Area
42	11	Rm 114 GB# 6, 7, 7A
43	4	Rm 129 Maintenance Area
44	28	Rm 149 Process Area GB# 31, 50
45	18	Rm 114 GB# 18
46	57	309 Tank Area
47	23	Rm 149 Process Area GB # 23, 24, 25
48	31	Rm 149 Process Area GB # 43A-43D
49	58	Corridor A, D, R, G, H, Stairwell #1-3, 127 Utility Rm
50	19	Elevator Area
51	56	Rm 249 HVAC Exhaust and Utilities Area
52	52	Rm 190 Deluge Process Area
53	5	Rm 141
54	20	Annex Area
55	21	Rm 149 Process Area C-Cell

56	53	Main Plenum Area
57	54	283 HVAC Exhaust & Utilities Area
58	55	235 HVAC Supply & Utilities Area
59	61	202 Process Area
60	62	241 Process Area
61	63	250 Storage Area
62	64	212 Storage Area
63	65	103 Process Area
64	66	102 Process Area
65	67	210 Process Area
66	68	200 Dock Area
67	69	203 Process Area
68	70	341 Utilities Area
69	71	441 Utilities Area
70	72	320 Utilities Area
71	73	200-300 Office Area
72	77	771/774 Out Buildings
73	79	Rm 114/114A Process Rooms
74	78	Rm 181A Size Reduction Area
75	80	Rm 183 Drum Counter
76	60	771 HVAC
77	74	774 HVAC
78	47	Rm 151 Radiation Control
79	76	771/774 Utilities
80	75	771/774 Cluster Facilities
81	81	771A Outbuildings

Appendix 5 Integrated Work Control Package Development

IWCP Process Flow



Appendix 6 RCRA Unit Summary

RCRA Units in Building 771 and Current Closure Status

Room No.	RCRA Unit No.	Description	Unit Reg. Status	Type of Closure Plan on File	What is Public Need
181A	771 1 (Old Unit 90 23)	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
182	771 1 (Old Unit 90 24	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
Annex	771 1 (Old Unit 90 25)	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
186	771 1 (Old Unit 90 32)	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
172	771 1 (Old Unit 90 64)	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
184	771 1 (Old Unit 90 65)	Container Storage (Vault)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
146C	771 1 (Old Unit 90 83)	Container Storage (Vault)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
163	771 1 (Old Unit 90 115)	Container Storage (GB)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
164	771 1 (Old Unit 90 116)	Container Storage (GB)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
180A	771 1 (Old Unit 90 117)	Container Storage (GB)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
180E	771 1 (Old Unit 90 119)	Container Storage (GB)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
180F	771 1 (Old Unit 90 120)	Container Storage (GB)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
180K	771 1 (Old Unit 90 121)	Container Storage (GB)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
187	771 1 (Old Unit 90 122)	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
183	771 1 (Old Unit 90 129)	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
180D	771 3	Hydroxide Precip (Treatment)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
149	90 21	Container Storage Area	None	MR Container Units Closure Plan	45 Day Notice
114	90 22	Container Storage Area	None	MR Container Units Closure Plan	45 Day Notice
180B	90 84	Container Storage (Vault)	None	MR Container Units Closure Plan	45 Day Notice
146	90 114	Container Storage Area	None	MR Container Units Closure Plan	45 Day Notice
146	90 114	Container Storage (GB)	None	MR Container Units Closure Plan	45 Day Notice
149	90 21	Container Storage (GB)	None	MR Container Units Closure Plan	45 Day Notice
114	90 22	Container Storage (GB)	None	MR Container Units Closure Plan	45 Day Notice
159	90 14	Container Storage (GB-4 only)	None	MR Container Units Closure Plan	45 Day Notice
149	771 3	Incinerator	None	Need One	Closure Plan
114	53	Misc Cementation (Treatment)	None	Need One	Closure Plan
114	90 001	Tank D-500	None	Need One	Closure Plan
114	93 002	Tank D-501	None	Need One	Closure Plan
114	93 003	Tank D-502	None	Need One	Closure Plan
114	93 004	Tank D-503	None	Need One	Closure Plan
114	93 005	Tank D-504	None	Need One	Closure Plan

RCRA Units in Building 771 and Current Closure Status

Room No.	RCRA Unit No.	Description	Unit Reg. Status	Type of Closure Plan or Permit	Date of Permit Mod.
114	93 006	Tank D-505	None	Need One	Closure Plan
114	93 007	Tank D-506	None	Need One	Closure Plan
114	93 008	Tank D-507	None	Need One	Closure Plan
114	93 009	Tank D-508	None	Need One	Closure Plan
114	93 010	Tank D-A	None	Need One	Closure Plan
114	93 011	Tank D-B	None	Need One	Closure Plan
114	93 012	Tank D-529	None	Need One	Closure Plan
114	93 013	Tank D-530	None	Need One	Closure Plan
114	93 014	Tank D-544	None	Need One	Closure Plan
114	93 015	Tank D-545	None	Need One	Closure Plan
114	93 016	Tank D-546	None	Need One	Closure Plan
114	93 017	Tank D-547	None	Need One	Closure Plan
114	93 018	Tank D-548	None	Need One	Closure Plan
114	93 019	Tank D-549	None	Need One	Closure Plan
114	93 020	Tank D-550	None	Need One	Closure Plan
114	93 021	Tank D-551	None	Need One	Closure Plan
114	93 022	Tank D-552	None	Need One	Closure Plan
114	93 023	Tank D-553	None	Need One	Closure Plan
114	93 024	Tank D-554	None	Need One	Closure Plan
114	93 025	Tank D-705	None	Need One	Closure Plan
114	93 026	Tank D-706	None	Need One	Closure Plan
114	93 027	Tank D-713	None	Need One	Closure Plan
114	93 028	Tank D-714	None	Need One	Closure Plan
114	93 029	Tank D-949	None	Need One	Closure Plan
114	93 030	Tank D-951	None	Need One	Closure Plan
114	93 031	Tank D-952	None	Need One	Closure Plan
114	93 032	Tank D-953	None	Need One	Closure Plan
114	93 033	Tank D-954	None	Need One	Closure Plan
114	93 034	Tank D-955	None	Need One	Closure Plan
146	93 035	Tank D-1001	None	Need One	Closure Plan
146	93 036	Tank D-1002	None	Need One	Closure Plan

RCRA Units in Building 771 and Current Closure Status

Room No.	RCRA Unit No.	Description	Unit Reg. Status	Type of Closure Plan in Effect	What to Publish Next
146	93 037	Tank D-1003	None	Need One	Closure Plan
146	93 038	Tank D-1004	None	Need One	Closure Plan
146	93 039	Tank D-1005	None	Need One	Closure Plan
146	93 040	Tank D-1006	None	Need One	Closure Plan
146	93 041	Tank D-1007	None	Need One	Closure Plan
146	93 042	Tank D-1008	None	Need One	Closure Plan
146	93 043	Tank D-1009	None	Need One	Closure Plan
146	93 044	Tank D-1010	None	Need One	Closure Plan
146	93 045	Tank D-1011	None	Need One	Closure Plan
146	93 046	Tank D-1012	None	Need One	Closure Plan
146	93 047	Tank D-1013	None	Need One	Closure Plan
146	93 048	Tank D-1022	None	Need One	Closure Plan
146	93 049	Tank D-1032	None	Need One	Closure Plan
146	93 050	Tank D-1014	None	Need One	Closure Plan
146	93 051	Tank D-1065	None	Need One	Closure Plan
146	93 052	Tank D-1066	None	Need One	Closure Plan
149	93 089	Tank D-208	None	Need One	Closure Plan
149	93 090	Tank D-360	None	Need One	Closure Plan
149	93 091	Tank D-361	None	Need One	Closure Plan
149	93 092	Tank D-362	None	Need One	Closure Plan
149	93 093	Tank D-363	None	Need One	Closure Plan
149	93 094	Tank D-364	None	Need One	Closure Plan
149	93 095	Tank D-451	None	Need One	Closure Plan
149	93 096	Tank D-452	None	Need One	Closure Plan
149	93 097	Tank D-453	None	Need One	Closure Plan
149	93 098	Tank D-454	None	Need One	Closure Plan
149	93 099	Tank D-466	None	Need One	Closure Plan
149	93 100	Tank D-467	None	Need One	Closure Plan
149	93 101	Tank D-468	None	Need One	Closure Plan
149	93 102	Tank D-469	None	Need One	Closure Plan
149	93 103	Tank D-470	None	Need One	Closure Plan

RCRA Units in Building 771 and Current Closure Status

Room No	RCRA Unit No	Description	Unit Reg Status	Type of Closure Plan in Effect	What to Publish Next
149	93 104	Tank D-472	None	Need One	Closure Plan
149	93 105	Tank D-921	None	Need One	Closure Plan
149	93 106	Tank D-922	None	Need One	Closure Plan
149	93 107	Tank D-923	None	Need One	Closure Plan
149	93 108	Tank D-927	None	Need One	Closure Plan
149	93 109	Tank D-928	None	Need One	Closure Plan
149	93 110	Tank D-931	None	Need One	Closure Plan
149	93 111	Tank D-932	None	Need One	Closure Plan
149	93 112	Tank D-933	None	Need One	Closure Plan
149	93 113	Tank D-934	None	Need One	Closure Plan
149	93 114	Tank D-971	None	Need One	Closure Plan
149	93 115	Tank D-972	None	Need One	Closure Plan
149	93 116	Tank D-973	None	Need One	Closure Plan
149	93 117	Tank D-974	None	Need One	Closure Plan
149	93 118	Tank D-975	None	Need One	Closure Plan
149	93 119	Tank D-976	None	Need One	Closure Plan
149	93 120	Tank D-980	None	Need One	Closure Plan
174	93 121	Tank D-1081	None	Need One	Closure Plan
174	93 122	Tank D-1082	None	Need One	Closure Plan
174	93 123	Tank D-1083	None	Need One	Closure Plan
174	93 124	Tank D-1087	None	Need One	Closure Plan
174	93 125	Tank D-1088	None	Need One	Closure Plan
180A	93 126	Tank D-1803	None	Need One	Closure Plan
180A	93 127	Tank D-1804	None	Need One	Closure Plan
180A	93 128	Tank D-1805	None	Need One	Closure Plan
180	93 129	Tank D-1809	None	Need One	Closure Plan
180A	93 130	Tank D-1810	None	Need One	Closure Plan
180A	93 131	Tank D-1811	None	Need One	Closure Plan
180A	93 132	Tank D-1813	None	Need One	Closure Plan
180A	93 133	Tank D-1816	None	Need One	Closure Plan
180A	93 134	Tank D-1817	None	Need One	Closure Plan

RCRA Units in Building 771 and Current Closure Status

Room No.	RCRA Unit No.	Description	Unit Reg. Status	Type of Closure Plan in Effect	What to Submit Next
180A	93 135	Tank D-1818	None	Need One	Closure Plan
180A	93 136	Tank D-1819	None	Need One	Closure Plan
180K	93 137	Tank D-83	None	Need One	Closure Plan
180K	93 138	Tank D-84	None	Need One	Closure Plan
180K	93 139	Tank D-85	None	Need One	Closure Plan
181A	93 140	Tank D-1401	None	Need One	Closure Plan
181A	93 141	Tank D-1402	None	Need One	Closure Plan
181A	93 142	Tank D-1406	None	Need One	Closure Plan
181A	93 143	Tank D-1407	None	Need One	Closure Plan
181A	93 144	Tank D-1408	None	Need One	Closure Plan
181A	93 145	Tank D-1410	None	Need One	Closure Plan
181A	93.146	Tank D-1411	None	Need One	Closure Plan
180K	93 149	Tank D-80	None	Need One	Closure Plan
180K	93 150	Tank D-81	None	Need One	Closure Plan
180K	93 151	Tank D-82	None	Need One	Closure Plan
114	93 152	Tank D-950	None	Need One	Closure Plan

RCRA Units in Building 774 and Current Closure Status

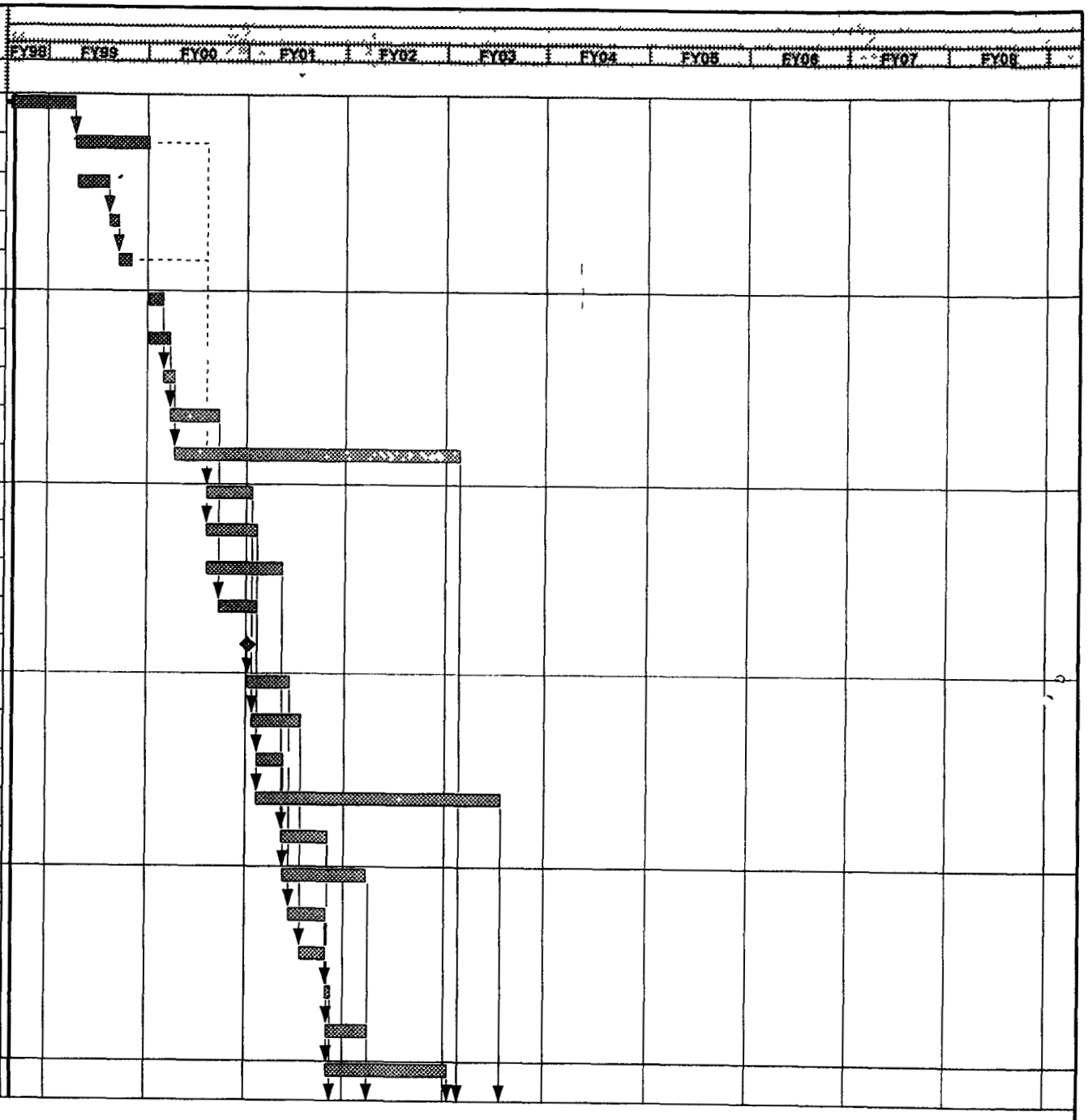
Room No.	RCRA Unit No.	Description	Unit Reg. Status	Type of Closure Plan in Effect	What to Publish Next
241	774 1	Container Storage Area	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
210	774 3A	Misc Waste Solidification (Trtmnt)	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
103	774 3B	Tank T-40	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
241	774 3B	Tank 201	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
241	774 3B	Tank 202	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
241	774 3B	Tank 203	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
241	774 3B	Tank 204	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
220	774 2	Tank T-102	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
220	774 2	Tank T-103	Permitted	Part X of Permit 97-05-30-01	Closure Description Document
202	55 01	Tank T-1A	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 02	Tank T-1RF	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 03	Tank T-4L	Interim Status	I S Closure Plan Pending	Closure Description Document
102	55 04	Tank T-10	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 05	Tank T-4R	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 07	Tank T-70	Interim Status	I S Closure Plan Pending	Closure Description Document
102	55 08	Tank F-5	Interim Status	I S Closure Plan Pending	Closure Description Document
102	55 09	Tank C-1	Interim Status	I S Closure Plan Pending	Closure Description Document
102	55 10	Tank T-9	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 11	Tank T-2F	Interim Status	I S Closure Plan Pending	Closure Description Document
102	55 12	Tank T-12F	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 22	Vacuum Filter B (Treatment)	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 23	Tank T-73B	Interim Status	I S Closure Plan Pending	Closure Description Document
102	55 24	Tank T-210A	Interim Status	I S Closure Plan Pending	Closure Description Document
202	55 25	Tank T-71	Interim Status	I S Closure Plan Pending	Closure Description Document
103	55 27	Tank 40	Interim Status	I S Closure Plan Pending	Closure Description Document
210	56 01	Tank T-1 Waste Oil Tank	Interim Status	I S Closure Plan Pending	Closure Description Document
210	56 02	Tank T-2 Waste Oil Tank	Interim Status	I S Closure Plan Pending	Closure Description Document
210A	56 03	Tank T-13 Waste Oil Tank	Interim Status	I S Closure Plan Pending	Closure Description Document
210A	56 04	Tank T-14 Waste Oil Tank	Interim Status	I S Closure Plan Pending	Closure Description Document
210	56 05	OASIS-Glovebox Mixer (Trtmt)	Interim Status	I S Closure Plan Pending	Closure Description Document
210	56 07	Tank T-374A Waste Oil Tank	Interim Status	I S Closure Plan Pending	Closure Description Document
UST	55 13 (also	Old Tank T-40	Interim Status	I S Closure Plan Pending	RFCA Decision Document *

RCRA Units in Building 774 and Current Closure Status

Room No	RCRA Unit No	Description	Unit Reg Status	Type of Closure Plan to Follow	What to Publish Next
	IHSS 215)				
UST	55 14 (also IHSS 124 2)	Tank T-66	Interim Status	I S Closure Plan Pending	RFCA Decision Document *
UST	55 15 (also IHSS 124 3)	Tank T-67	Interim Status	I S Closure Plan Pending	RFCA Decision Document *
UST	55 16 (also IHSS 124 1)	Tank T-68	Interim Status	I S Closure Plan Pending	RFCA Decision Document *

* RFCA Decision Document may or may not be necessary since tanks were drained and filled with foam

Activity ID	Activity Description
771/774 Cluster Project	
1X7132	SET 32 - Room 149 Glovebox New #30
1X7137	SET 37 Room 181A Process Area
1X7134	SET 34 Room 148 Process Area
1X7140	SET 40 Room 183 Storage Area
1X7144	SET 44 Room 179 Maintenance Area
1X7177	SET 77 - 771/774 Out Buildings
1X7112	SET 12 Room 114 Glovebox #8 8E & 9
1X7781	SET 81 771A Cluster Out Buildings
1X7116	SET 16 Room 114 Glovebox #15 & 16
1X7159	SET 59 - Indirect/Direct Evaporative Cool Area
1X7117	SET 17 - Room 114 Glovebox #17
1X7135	SET 35 - 147 Office Area
1X7122	SET 22 - Room 149 Gloveboxes #33 37 38 & 39
1X7111	SET 11 - Room 114 Gloveboxes #6 7 & 7A
1X74PA991	*774 Operations Shutdown Complete*
1X7461	SET 61 - Room 202 Process Area
1X7110	SET 10 - Room 114 Glovebox #5
1X7118	SET 18 - Room 114A Glovebox #18
1X7136	SET 36 - Room 146 Process Area
1X7127	SET 27 - Room 149 Glovebox Old #30
1X7123	SET 23 - Room 149 Gloveboxes #23, 24 & 25
1X7462	SET 62 - Room 241 Process Area
1X7107	SET 07 - Room 114 Glovebox #2
1X7463	SET 63 - Room 250 Storage Area
1X7114	SET 14 - Room 114 Glovebox #12
1X7130	SET 30 - Room 149 Glovebox #42



Project Start	01OCT92
Project Finish	28SEP07
Data Date	01JUN98
Run Date	02JUN98

ZEarly Bar
Progress Bar
Critical Activity

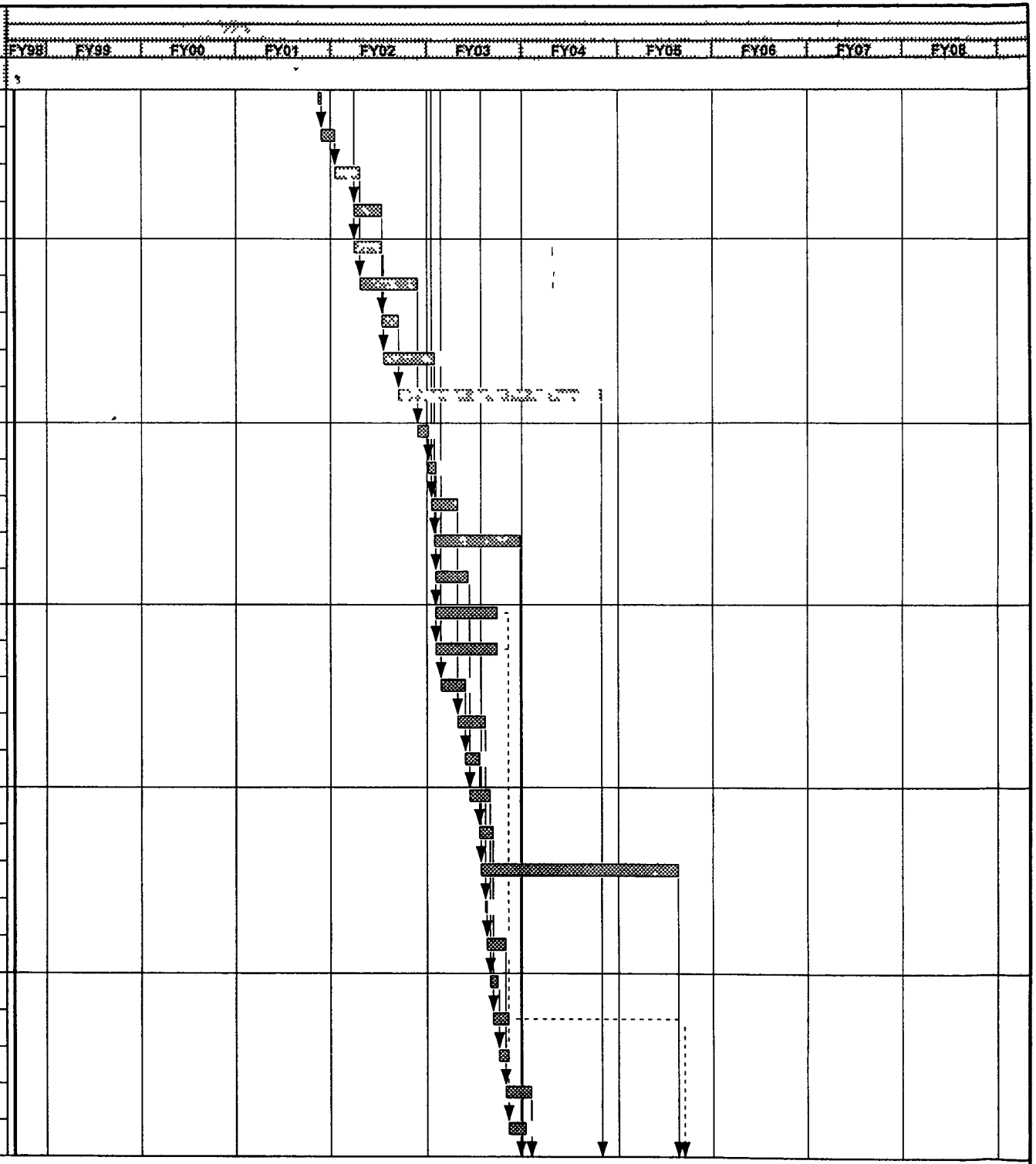
MP98 1X00

B771 Internal Master

Safe Sites of Colorado LLC

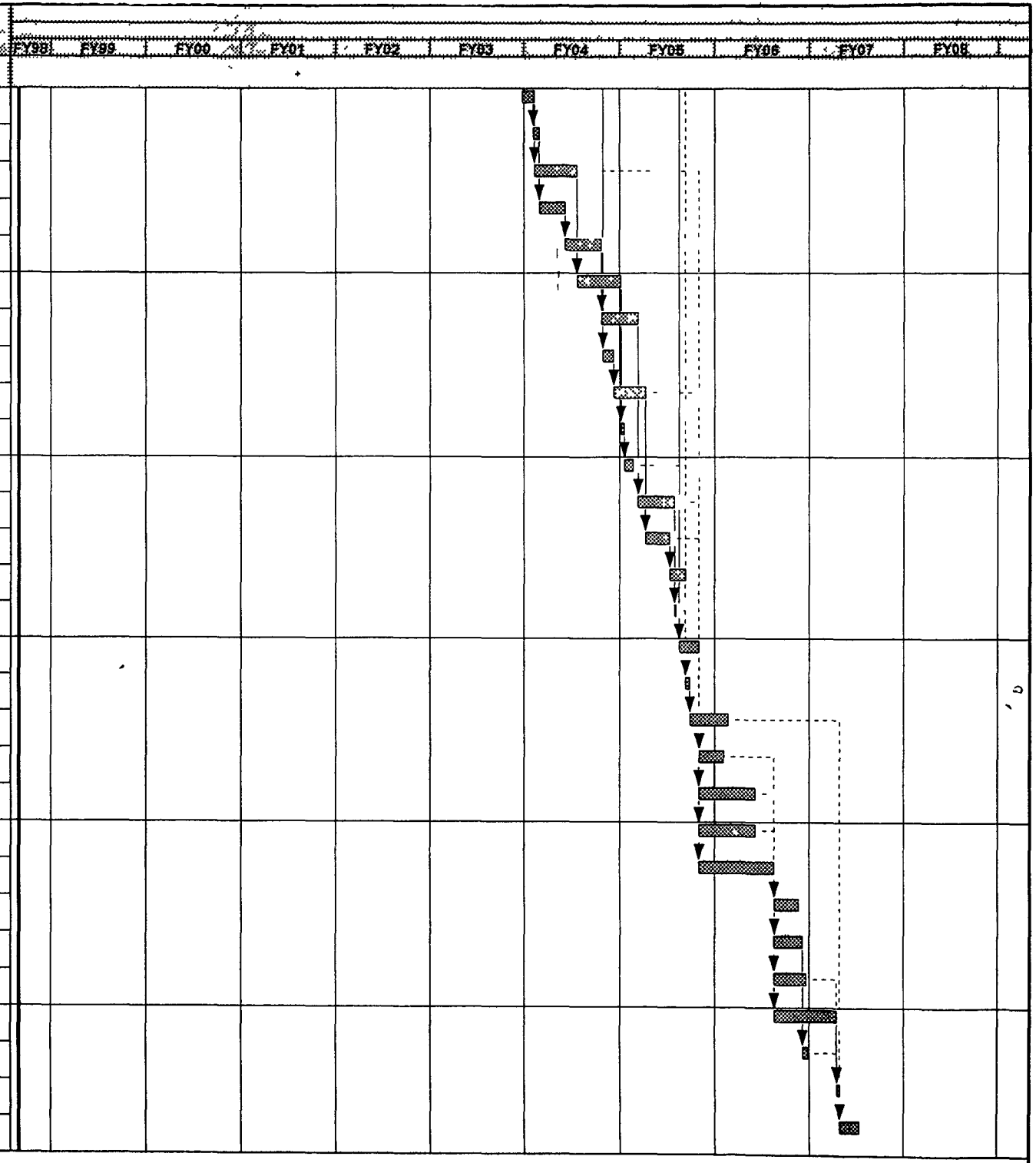
Deactivation & Decommissioning

Activity ID	Activity Description
771/774 Cluster Project	
1X7464	SET 64 - Room 212 Storage Area
1X7465	SET 65 - Room 103 Process Area
1X7466	SET 66 Room 102 Process Area
1X7131	SET 31 Room 149 Gloveboxes #43A, B, C & D
1X7115	SET 15 - Room 114 Glovebox #13 & Old 14
1X7467	SET 67 - Room 210 Process Area
1X7121	SET 21 - Room 149 Process Room & C-Cell
1X7108	SET 08 Room 114 Glovebox #3
1X7143	SET 43 Room 180A-F & K Process Area
1X7468	SET 68 - Room 200 Dock Area
1X7469	SET 69 - Room 203 Process Area
1X7126	SET 26 Room 149 Glovebox #29
1X7106	SET 06 - Room 114 Glovebox #1
1X7470	SET 70 - Room 341 Utilities Area
1X7474	SET 74 774 HVAC
1X7476	SET 76 - 774 Utilities All
1X7103	SET 03 - Locker Room Area
1X7124	SET 24 - Room 149 Glovebox #26
1X7101	SET 01 - Corridor B Office Area
1X7471	SET 71 - Room 441 Utilities Area
1X7102	SET 02 - Corridor F Office Area
1X7138	SET 38 - Room 182 Process Area
1X7125	SET 25 - Room 149 Glovebox #27
1X7133	SET 33 - Room 149 Tank Farm
1X7472	SET 72 - Room 320 Utilities Area
1X7104	SET 04 - 129 Maintenance Area
1X7473	SET 73 - Rooms 200-300 Office Area
1X7129	SET 29 - Room 149 Glovebox #40 & 44
1X7475	SET 75 - 774 Cluster Fac Structures & Cap



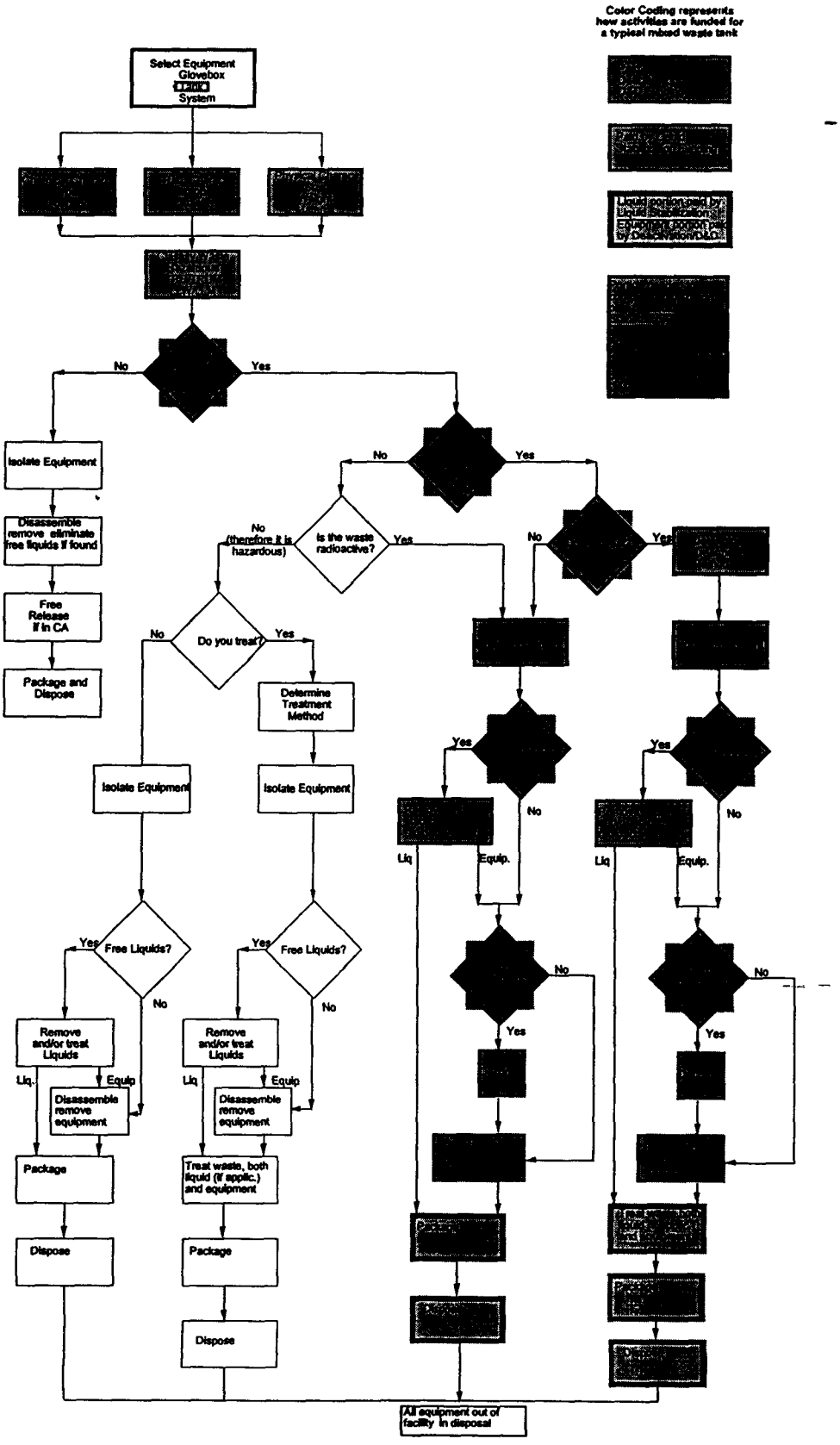
771/774 Cluster Project

Activity ID	Activity Description
1X7109	SET 09 - Rm 114 Gloveboxes #4 5A, 9A & 24
1X7151	SET 51 149 Utilities Support Area
1X7113	SET 13 - Room 114 Glovebox #11 & New 14
1X7128	SET 28 - Room 149 Gloveboxes #31 & 50
1X7145	SET 45 - Room 174 Process Area
1X7105	SET 05 - Room 141 (Infinity Room)
1X7148	SET 48 - 153 Process Area
1X7179	SET 79 Room 114/114A Process Rooms
1X7150	SET 50 - 158 Lab Area
1X7119	SET 19 - Elevator Area
1X7120	SET 20 - Annex Area
1X7146	SET 46 164 Lab Area
1X7141	SET 41 - Room 186 Process Area
1X7142	SET 42 180 Office Area
1X7149	SET 49 157 Stock Room Area
1X7139	SET 39 - Room 182A Process Area
1X7147	SET 47 - 151 Radiation Control Area
1X7158	SET 58 Corr A D E G,H Strwls 1-3, Util & Tnnl
1X7155	SET 55 - 235 HVAC Supply & Utilities Area
1X7160	SET 60 - 771 HVAC
1X7176	SET 76 - 771 Utilities All
1X7156	SET 56 249 HVAC Exhaust & Utilities Area
1X7152	SET 52 190 Deluge Process Area
1X7178	SET 78 Room 181A Size Reduction Area
1X7153	SET 53 Main Plenum Area
1X7154	SET 54 - 283 HVAC Exhaust & Utilities Area
1X7180	SET 80 - Room 183 Drum Counter
1X7157	SET 57 - 309 Tank Area
1X7175	SET 75 - 771 Cluster Fac , Structures & Cap



Appendix 8 Equipment Removal Flowchart

Equipment Removal Flowchart



Appendix 9 Set Description, End Points and Hazards Matrix

DOE Communication (303) 966-5993
Kaiser-Hill Communication (303) 966-2882

Rocky Flats Community Advisory

Date 9/11/98

CA - 50-98

DRAFT BUILDING 771 DOP OUT FOR PUBLIC COMMENT/ D&D PIZZA MEETING SCHEDUELD FOR SEPTEMBER 23, 1998

The draft DOP for 771 will be available for public comment beginning September 14, 1998. The DOP describes the approach and applicable requirements that will be used in the decontamination and decommissioning of the facility.

All comments received before November 2, 1998 will be considered and addressed through changes to the document, and/or in a responsiveness summary to the final.

The document will be available for public review in the following locations:

Rocky Flats Public Reading Room
3705 West 112th Avenue
Westminster, CO 80030

Standley Lake Library
8485 Kipling Street
Arvada, CO 80005

U S. Environmental Protection Agency
Region VII Superfund Records Center
999 18th Street, Suite 500
Denver, CO 80202-2466

Citizens Advisory Board
9035 Wadsworth Parkway, Suite 250
Westminster, CO 80021

Colorado Department of Public Health and Environmental Health Center
4300 Cherry Creek Drive South
Building A
Denver, CO 80222-1530

-more-

In addition, a D&D Pizza Meeting has been scheduled for September 23,1998 at the Broomfield Senior Center from 4:30 – 6:30 p.m. Agenda items will include:

- **A discussion on options for disposal of clean building rubble, including on-site and off-site disposal, and the impacts of these options**
- **Overview of 771 DOP**

The Broomfield Senior Center is located at 280 Lamar Street, Broomfield. For additional information please call John Corsi, Kaiser-Hill Communication, at 303 966-6526.

Rocky Flats Environmental Technology Site
P O Box 464
Golden, Colorado 80402-0464